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## Educational News and Editorial Comment

### A DEFINITION OF THE FUNCTIONS OF A STATE EDUCATIONAL SYSTEM

By an act passed by the legislature of California in May, 1931, the governor of that state was authorized to engage the services of an educational-research foundation to make a survey of tax-supported education in California of higher than high-school grade. The survey was undertaken by the Carnegie Foundation for the Advancement of Teaching. The Foundation used its own staff to assemble the necessary facts but assigned to an independent commission of seven, organized under its auspices, "the task of interpreting and appraising the pertinent facts and of recommending the policies and operations needed in the future." The following nationally known educators were members of the independent commission: L. D. Coffman, Charles H. Judd, O. R. Latham, A. B. Meredith, James E. Russell, George F. Zook, and S. P. Capen, chairman. The Foundation has accepted the recommendations of the commission without amendment and has transmitted them to the governor of the state as the recommendations of the Foundation.



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In making its recommendations, the commission felt that it should undertake to define the fundamental principles of public policy which should be applied in the development of a state educational system. Such a definition of policy is very timely, not only for California, but for the entire nation. Such is the case because under the pressure of economy our system of values is being disturbed and in many instances seriously modified. Everywhere school officials and the public are facing the problem: What is of most worth in education?

The statement of policy formulated by the commission and approved by the Carnegie Foundation merits careful consideration. The complete statement follows.

The staff of the Carnegie Foundation having submitted to the commission its analysis of the educational situation in California above the high school, the commission presents herewith its recommendations, constituting a "suitable future policy and plan of operation," to be made effective by whatever legislative resolutions, statutes, and constitutional amendments are necessary to enable the appropriate policy-making bodies and administrative officers to bring the recommendations into operation, and to stimulate better co-operation among the citizens to these ends.

The commission finds that much of the confusion in the educational system arises from the fact that no authority competent to plan and speak for the state as a whole has determined in clear and unmistakable terms the social and educational functions to be performed by various units of the system in serving the present needs of civilization in California.

The commission therefore suggests that the following statements concerning the functions of the educational system be accepted as the basis for a resolution by the legislature, which shall serve to declare its own future policy and to guide the people of the state and the various boards and officers charged with the performance of educational services.

### The Functions of the Educational System

The fundamental functions of the state educational system are to educate the people to greater and greater competency, in performing

First, the general social obligations of citizenship or membership in American civilization required of all men and women and,

Second, the particular or specialized services to society allotted to different occupational groups, membership in any one of which is a matter of individual choice and fitness.

These educational functions correspond with the two types of requirement which modern social life lays upon every citizen. Every person has social, political, or other responsibilities which he should bear in common with other per-

sons, as in his membership in the family, the neighborhood, the local community, the state, the nation, and humanity at large. On the other hand, every person has, under our economic system of subdivision of work or services, a particular obligation which he meets, usually by the services he renders through his special remunerative occupation.

*The first function of the common school system.*—It is the primary and fundamental function of the common school system extending from the earliest years of schooling, through kindergarten, elementary school, junior and senior high school, and the junior college, to educate the citizen for effective participation in all those common understandings and co-operations which are necessary to sustain the best in our complex contemporaneous civilization which is American.

Our common schools must be dedicated primarily to educating men and women so that they may work and live together more successfully in and through the institutions of a civilization that must be constantly adapted to changing conditions. Failure of citizens to understand many of our current problems and their tragic inability to co-operate in the solution of them constitute one cause that has led to breakdowns in our current civilization.

A common school system rededicated to the original social purposes which warranted tax support by all the citizens of the state, must aim mainly at the fullest possible development of a social rather than a selfish personality. It will seek to develop an enlightened citizenship, rather than an enlightened selfishness. Much of the current criticism of the behavior of citizens as the product of schools is based on the fact that the common schools, above the elementary school, are not really utilized by the student nor fully managed by teachers and administrators for this fundamental civilizing purpose. When this ideal is realized, subject boundaries will be less sharply defined. New and more practical groupings of materials will be devised, and the process of learning will be reorganized, much as is now being done in comprehensive courses at some 160 institutions in the United States. Problems will become more important than topics, libraries than textbooks.

The points at which public and professional criticism are now mainly directed are the secondary rather than the elementary stages of general or common schooling. That reform has been at work for some time in the field of secondary education is attested by the increase in junior high schools, senior high schools, and junior colleges. Modifications of the curriculum, changed methods of teaching and learning, educational and vocational counseling are merely additional symptoms of the attempt to meet current dissatisfaction with the schools as they are or have been. A complete reconstruction, somewhat similar to that which began in the elementary school in the eighties and nineties seems now well inaugurated in the secondary stages of general education.

The reconstruction of secondary education, necessarily a concern of this commission which deals with its later stages in the junior colleges and the lower divisions of the teachers' colleges and the university, will involve several marked changes from the traditional outlook and method.

In the first place, secondary education will be not less intellectual but more social and adaptive. It will be directed toward giving the student an understanding of the natural and social world in which he lives. The mastery of the academic letters, arts, and sciences will be no longer the end of his school mastery, but the educational means of understanding life. Whatever other resources of experience lie outside of the traditional disciplines, such as industrial arts and fine arts, will be utilized with full scholastic respectability as valued aids in realizing the new and broader conception of the human and social purposes of the common schools.

In the second place, secondary education will focus its attention more steadily on contemporaneous life, with its oncoming problems. The lag between what the school teaches and what present and impending citizenship requires will be decreased. Scholarship, once chiefly related to the past, will now be related to the present, with study of the past still highly valued to the extent that the contributions of the past inevitably persist in the present.

Third, schooling will not be thought of as practically the end of education or learning, now too commonly and so fatally the case. Education will be regarded as a continuous process, coterminous with life, to which schools merely give impetus for further and continuous personal inquiry and growth. An education at school will be regarded as preparatory to continuous adult learning. How much academic ground is covered in the school building under a licensed or accredited teacher, will no longer be so important as it has been. What one learns anywhere in life, and the degree to which one has the impulse and power to continue to learn and think accurately, will be far more important to all concerned—to the world, to the university, and, most of all, to the student himself.

*The second function of the common school system.*—It is a second and equally important function of the educational system to prepare young people for productive living. In so far as the individual differences of students—intellectual, social, economic—warrant, this end will be accomplished through occupational training of different types.

The most significant body of psychological fact concerning human nature that has recently influenced our thinking or our action is that which reveals the astounding range of individual differences in a social or school population. People are not all alike. To believe they are and to treat them as though they were is to commit a grave human injustice to many individuals, and to deprive society of the use of their full powers. Social and educational justice is far more nearly realized by treating students differently than by treating them identically.

Differentiated treatment is necessary the moment individual differences begin to assert themselves in such a manner as to make inadequate the traditional curriculum and method of common schools. It may first express itself in allowing or providing a different mode of approach to the study of the world and civilization.

Inability or lack of interest exhibited by a pupil demands a redirection of intellectual interest and provision for a shift of educational emphasis. A change

of emphasis from the academic to other domains of arts, letters, or science, on the part of a student, often salvages a school career and acts as a spur to continuous learning. After some years of common schooling a considerable portion of students in compulsory attendance show a lapse of interest. The fact that such persons display limited ability in liberal studies may indicate that their chief powers lie in other directions than the purely literary or mathematical. Here arises the necessity for providing vocational courses of a quality and value equal to, and co-ordinate with, those of an academic nature. This situation involves growing numbers of cases as larger and larger groups of the population move through the school system toward the upper levels of common schooling. New intellectual opportunities and new opportunities for specialized, vocational training are then plainly indicated, the more so because little by little the school has been forced to assume responsibilities that the home and industry cannot or will not longer perform. But in all such cases the trade or industrial teacher still has the responsibility of socializing or civilizing the student through connecting in the fullest possible extent his vocational activity with the rest of civilized life. Sometimes late, sometimes early, the readjustment just implied takes place for every student.

*The main function of the university system.*—It is the main function of the university system, which includes the upper divisions of colleges, the graduate schools, and the professional schools, to educate specialists for the strategically important social services which modern civilization requires, and to do this with full regard to the number of such specialists that society can utilize. Among the specialized callings for which the university system educates are research, teaching, the ministry, the law, medicine and surgery, engineering, and similar professions.

Provision for general education in the United States commonly closes at the end of the second college year, or at the end of the lower division or junior college. Certainly, it is a very general practice throughout the United States, particularly in most institutions west of the Appalachian Mountains, to begin scholarly concentration in the arts, sciences, and letters with the third (or junior) college year; that is, with the senior college proper, and to begin either professional or specialized pre-professional education at the same stage in school progress. The exceptions, though conspicuous, merely accentuate the general trend of current practice.

In California both the university and the teachers' colleges recognize a functional articulation between the lower and upper divisions, and legislative enactment recognizes that the local, but state-aided, junior college (or college, as it perhaps ought to be termed), is a part of the provision for tax-supported secondary education.

A profession may be provisionally defined as "a vocation involving relations to the affairs of others of such a nature as to require for its proper conduct an equipment of learning or skill, or both, and to warrant the community in making restrictions in respect to its exercise." The effective or ineffective perform-

ance of professional duties is preservative or destructive of some fundamental potentiality, right, or other value of crucial importance to society or the individual. For this reason ethical practice is as important as expert practice. This is obviously true respecting a career in law, medicine, teaching, engineering, or the ministry and ought to be true respecting journalism and business management. Complete devotion to professional specialization is not now usually regarded as the major undertaking of the student until the conclusion of the period of liberal, general, or civilizing schooling.

Since expert practice is essential to make devoted ethical interest effective in result, special pre-professional training is often required in studies basic to professional understanding. Mastery of practical skill is usually acquired under mature supervision in either an internship or an apprenticeship. In further protection of society, the state finally licenses only those graduates who meet its standards.

The selection of those students who are promising material for such specialized professional education and the determination of the nature of their preliminary or professional education, should rest not with the common schools, but with the university. The university should utilize the advice of its professional teachers and those actively engaged in professional practice, as well as the findings now available from modern personnel studies.

The right to admit to specialized courses is properly lodged in the university system, but in so far as the university method of judging the ability and educational promise of the applicant is antiquated and inadequate, injustice ensues to the individual and therefore ultimately to society. Of such injustice the layman has a right to complain.

The right of the university to refuse admittance to a professional course requiring special and high qualifications rests in some measure upon other grounds than that of personal fitness. The commission is not unmindful of the necessity of giving some attention to the relation of supply to the probable demand in the several professions. Only a limited number of certain types of professionals can be utilized by society, and overproduction in these particular fields may readily become a social and professional evil, as well as an unwarranted cost to the university and the public. For this reason, admission to some professional schools will soon become, if it is not already, a matter of discriminative selection. Every large consideration involved in this problem of professional school admission—whether it be personal or social, financial, or professional—confirms this policy. The selective functions of a university system are primarily social in purpose, and the individual is and ought to be of secondary consideration.

What has been said of admission to specialized professional schools in the university may not at first thought seem to apply to all those who seek admission to the senior college of arts, letters, and science. The university should be concerned not only with clearly professional subject matter but also with the various fields included within the division of letters, the arts, and the sciences, which from their very nature prepare through special mastery for superior civic serv-

ice. The same discriminative and selective principles must be exercised in admitting students to the senior college as are applicable in respect of the professional schools.

## THE EXPANSION OF EDUCATION IN THE UNITED STATES

The *Biennial Survey of Education in the United States, 1928–1930*, published by the United States Office of Education, contains data

TABLE I

KINDERGARTEN, ELEMENTARY, COMMERCIAL, SECONDARY, NORMAL-SCHOOL AND COLLEGE ENROLMENTS, 1900–1930

| Schools | 1900 | 1910 | 1920 | 1930 |
|---|---|---|---|---|
| Kindergartens (public and private) | 225,394 | 346,189* | 510,949 | 777,899 |
| Public elementary schools and kindergartens | 14,983,859 | 16,898,791 | 19,378,927 | 21,278,593 |
| Private elementary schools and kindergartens (largely estimated) | 1,240,925 | 1,558,437 | 1,485,561 | 2,309,886 |
| Total elementary and kindergarten | 16,224,784 | 18,457,228 | 20,864,488 | 23,588,479 |
| Public high schools | 519,251 | 915,061 | 2,199,389† | 4,399,422 |
| Private high schools | 110,797 | 117,400 | 213,920† | 341,158‡ |
| Preparatory schools (in colleges and universities) | 56,285 | 66,042 | 59,309 | 47,309 |
| Secondary students in normal schools | 9,570 | 12,890 | 22,058 | 11,978 |
| Total secondary students | 695,903 | 1,111,393 | 2,494,676 | 4,799,867 |
| Normal schools and teachers' colleges (excluding secondary students) | 69,593 | 88,561 | 135,412 | 161,524 |
| Colleges, universities, and professional schools (excluding preparatory students) | 167,999 | 266,654 | 462,445 | 924,275 |
| Total college and normal students | 237,592 | 355,215 | 597,857 | 1,085,799 |
| Private commercial and business schools | 91,549 | 155,244 | 335,161 | 179,756§ |

* 1912. † From state reports. ‡ 1928. § 1929.

which reveal the striking expansion of American education since the opening of the present century. The expansion of education in this country during the past three decades has been unparalleled in the history of the world. Marking, as it does, a new attitude toward

childhood and the development of a new social policy, this remarkable expansion in education is one of the most significant social changes of our time. Table I reveals something of this expansion.

It will be noted that enrolment in the elementary school has increased each decade at a practically constant rate of 13 to 14 per cent. The number of secondary-school pupils increased about 60 per cent from 1900 to 1910. Since 1910 secondary-school enrolment

TABLE II

NUMBER OF STUDENTS TAKING SOME FORM OF COLLEGE WORK, 1900–1930

| YEAR | UNIVERSITIES AND COLLEGES | | | TEACHERS' COLLEGES | | | COLLEGIATE STUDENTS IN NORMAL SCHOOLS | | |
|---|---|---|---|---|---|---|---|---|---|
| | Regular Year | Summer Session | Extension, Correspondence, and Short Courses | Regular Year | Summer Session | Extension, Correspondence | Regular Year | Summer Session | Extension, Correspondence |
| 1930..... | 924,275 | 249,150 | 294,044 | 118,411 | 119,111 | 52,290 | 43,113 | 19,745 | 7,799 |
| 1928..... | 868,793 | 239,570 | 292,074 | 114,618 | 120,019 | 61,090 | 46,627 | 23,187 | 7,082 |
| 1926..... | 767,263 | 209,454 | 273,235 | 85,207 | 92,588 | 40,076 | 49,609 | 38,419 | 11,508 |
| 1924..... | 664,266 | 189,943 | 144,858 | 58,896 | 74,619 | 32,362 | 11,240 | 13,563 | 16,927 |
| 1922..... | 550,906 | 148,063 | 119,708 | 56,432 | 72,248 | 24,665 | ..... | ..... | 10,790 |
| 1920..... | 462,445 | 94,838 | 83,100 | 54,721 | 38,011 | 13,360 | ..... | ..... | 5,202 |
| 1918..... | 330,689 | 78,059 | 50,314 | ..... | ..... | ..... | ..... | ..... | ..... |
| 1916..... | 354,325 | 89,438 | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| 1915..... | 303,233 | 83,234 | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| 1910..... | 266,654 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| 1905..... | 199,045 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| 1900..... | 167,999 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |

has approximately doubled in each decade. College enrolment increased about 50 per cent from 1900 to 1910, 68 per cent from 1910 to 1920, and 82 per cent in the last decade.

Table II presents data on the number of students taking some form of college work.

Critics of the American educational system not infrequently assert that there are in our high schools and colleges many students who are mentally incapable of doing the work there. In view of such criticism, the facts with respect to high-school and college graduation are very significant. Despite the rapid expansion of high-school enrolment, the percentage of high-school graduates for the decade 1920–1930 increased more rapidly than the percentage of high-school

enrolment. Of even greater significance is the fact that, whereas the number of college students increased 82 per cent from 1920 to 1930, the number of college graduates increased 159 per cent.

The increasing number of high-school and college graduates is shown in Table III.

According to the estimates of the Office of Education, there were in 1930 approximately 1,694,000 living college graduates and 7,437,000 living high-school graduates who had not taken a college degree.

TABLE III

NUMBER OF HIGH-SCHOOL AND COLLEGE GRADUATES

| Year | High School | College |
|---|---|---|
| 1890 | 43,731 | 14,306 |
| 1900 | 94,884 | 25,324 |
| 1910 | 156,429 | 34,178 |
| 1920 | 311,266 | 47,326 |
| 1930 | 643,166 | 122,484 |

These figures mean that in every 1,000 of the adult population there were 23 persons with a college degree and 102 persons who had graduated from high school but not from college. About one-eighth of the adult population had continued their education through high school or beyond.

## THE STATUS OF STATE EDUCATIONAL ASSOCIATIONS IN THE UNITED STATES

A recent bulletin of the Bureau of School Service of the University of Kentucky is entitled *A Critical Analysis of the Present Status and Significant Trends of State Education Associations of the United States*. During the past quarter of a century there has been a remarkable expansion in the membership of these organizations. In 1907, for example, the total membership in all the states was only 65,993, or 13.8 per cent of the teachers in the country. By January 1, 1930, the membership had increased to 697,775, an increase of 957.3 per cent. On the latter date 76.8 per cent of the teachers were enrolled in professional organizations. At present thirty-four associations have full-time executive secretaries, whereas in 1919 only seven state educational associations provided for such service.

Thirty-nine associations publish journals. The annual expenditures of the state education associations amount to approximately $2,000,000.

The following statement summarizes the objectives set up and the objectives achieved by the state associations.

Eight associations maintain placement bureaus, thirty-one do not; one association owns a preventorium, thirty-eight do not; three associations have some connection with homes maintained for aged and needy teachers, thirty-five do not; and seven associations provide group insurance for teachers while thirty-two do not. Thirty-four associations favor a federal department of education with a secretary in the president's cabinet; five have taken no action in this matter; twenty-seven associations favor selecting a state superintendent by appointment either by the governor or by a state board of education; twelve have taken no action in the matter; thirty-one associations favor minimum qualifications for elementary teachers; eight have not considered the question; seven associations favor a single-salary law for teachers; thirty-one have taken no action, and twenty-seven associations report that the question of a law providing for a periodical leave of absence for teachers has not been considered. Fourteen associations have taken no action concerning a teacher-tenure law; two oppose such a law while ten secretaries are in favor of a law which makes some provision for compensating teachers when absent because of illness; five oppose it; and twenty-four have not considered it. Twenty favor a law providing for kindergartens; four oppose it; and fifteen are noncommittal. Twenty-four secretaries do not know what position the associations should take with respect to a retirement-fund law. Fifteen secretaries are in favor of free textbooks; eight oppose them; and sixteen have not considered the question.

The final conclusion reached by the author of the bulletin is as follows:

The final conclusion of this study is that the teachers of the United States and the educational institutions should be more aggressive in exercising a continued social pressure which will mold and expand group consciousness on educational issues. The teaching profession should formulate a program that will deserve respect and then demand that its program be respected. The conditions of teaching may not be improved materially until there is a militant economic program worked out on a sound educational basis and supported by the teaching profession. Since teaching is a civil service, it may not be improper for teachers to consolidate their votes on politico-educational issues. The state education associations should probably do more to mold public opinion and to create educational sentiment, both of which are so essential for intelligent school legislation and control.

## THE HIGH COST OF EDUCATION IN SMALL SCHOOLS

There are in this country somewhat more than 150,000 one-teacher schools. In many, if not most, of these schools the number of pupils in attendance is so small that the cost per pupil is greatly in excess of the cost per pupil in the larger schools. Evidence is not lacking to show that the small rural elementary school is not only inefficient but extremely costly. The same criticism may with equal propriety be directed against a great many small high schools. A recent investigation of the cost of education in the small schools of South Carolina reveals a condition which exists, no doubt, in other sections of the country. The investigation was reported in the *United States Daily* by Henry L. Fulmer, Division of Research and Information, Department of Education of South Carolina. The following paragraphs are quoted from the report.

The daily teacher salary cost per pupil in average daily attendance in all-white elementary schools is as follows: for the one-teacher elementary schools, 33.2 cents; for the two-teacher elementary schools, 28.9 cents; for the three-teacher elementary schools, 25.8 cents; for the four-teacher elementary schools, 23.3 cents; for the five-teacher elementary schools, 22.6 cents; six-teacher elementary schools, 21.8 cents; seven-teacher elementary schools, 21.3 cents; eight-teacher elementary schools, 19.7 cents.

There is a marked decrease in cost in each succeeding teacher size from $0.332 in the one-teacher schools to $0.197 in the eight-teacher schools. Further study shows that this reduction in cost continues through the fifteen-teacher schools, with slight variations in the nine- and twelve-teacher schools.

This reduction in cost in the larger elementary schools does not continue. On the contrary, a slight increase is noted over the previous low point.

The daily teacher salary cost per pupil in average daily attendance for the white high schools can be seen as follows: in two-teacher high schools, 52.6 cents; in three-teacher high schools, 44.9 cents; in four-teacher high schools, 40.2 cents; in five-teacher high schools, 35.4 cents; in six-teacher high schools, 32.9 cents; in seven-teacher high schools, 33.2 cents; in eight-teacher high schools, 30 cents.

It is seen from these figures that a very similar trend is found in the high schools as was shown in the elementary schools. There was a decrease in daily pupil cost from $0.526 in the two-teacher high schools to $0.30 in the eight-teacher high schools. In the larger teacher size high schools, this cost appears to increase slightly over the low-cost point shown in the eight-teacher high school.

Although the small elementary schools maintain the lowest salary scale, the highest cost per pupil is found in these schools, due to the low teacher load. The

reverse is the case in the fifteen-teacher schools. Here the load is highest, the cost is the lowest, even though the salary scale is higher than in the smaller schools.

One notes the highest cost and the lowest load in the small high schools. In the high schools, due to such factors as a small teacher load throughout and a higher salary scale, the cost remains higher for the high schools than for the elementary schools.

This study has shown a wide difference in the daily teacher salary cost per pupil in average daily attendance between the small schools and the large schools. In some instances, for both elementary and high schools, the cost in the small schools is almost twice as much as the cost in the larger schools. For instance, the cost in the one-teacher elementary schools is $0.332 while the cost in the fifteen-teacher schools is $0.169; the cost in the two-teacher high schools is $0.526, while the cost in the eight-teacher school is $0.30; the ten-teacher, $0.305.

If all schools operated for 180 days, the annual teacher salary cost per pupil in average daily attendance would be $59.72 for one-teacher elementary schools, while the fifteen-teacher schools would be $30.42; the same for the two-teacher high schools would be $94.68, and $54 for eight-teacher or $54.90 for the ten-teacher high schools.

In a study on the cost of school transportation in South Carolina, it was found that the median cost of transporting an elementary pupil for this state was $0.089 per day, while $0.136 was the median cost of transporting a high-school pupil. Therefore, with these figures at hand, the following elementary- and high-school cost data are presented: Daily teacher salary cost per pupil in average daily attendance in one-teacher elementary schools, $0.332. Daily teacher salary cost per pupil in average daily attendance in eight-teacher elementary schools, $0.197. Average daily cost of transporting an elementary pupil, $0.089. Total, $0.286. Difference in favor of transporting and teaching in eight-teacher elementary schools, $0.046.

Daily teacher salary cost per pupil in average daily attendance in two-teacher high schools, $0.526. Daily teacher salary cost per pupil in average daily attendance in eight-teacher high schools, $0.300. Average daily cost of transporting a high-school pupil $0.136. Total, $0.436. Difference in favor of transporting and teaching in eight-teacher high schools, $0.090.

From the above figures, it is important to note that the combined cost of transporting an elementary pupil and the average teacher salary cost per pupil in average daily attendance in the eight-teacher elementary schools is less than the salary cost per pupil in the one-teacher schools. In other words, the pupils from the one-teacher schools, under average conditions, could be transported and taught in eight-teacher schools cheaper than the same pupils can be taught in the one-teacher schools. One can see the advantages gained by the child in the eight-teacher schools over the one-teacher schools through improved educational offering, as well as an additional value in money invested when the child

can be given forty-five–minute instead of fifteen-minute recitations. In the high schools, it is of interest to note that the average cost of transporting high-school pupils plus the teacher salary cost per pupil in the eight-teacher high schools is less than the teacher salary cost alone per pupil in the two-teacher high schools.

Under the proper school administrative control and centralization, transportation of pupils effects a considerable saving in school expenditures and at the same time affords an excellent opportunity for improved school offering. Often school transportation, when not considered in its proper application, is thought of as merely giving the children a ride at the expense of the public.

With county-wide control of schools, under a strong board and a capable school administrator as the professional head, we could effect much savings of school cost and at the same time, establish a better school system, especially for the rural children. Of the many things that may be done for greater economy and efficiency in our schools, the regulation of transportation and the control of teacher load are most prominent.

In order to effect these changes in a successful way, a complete change from the inadequate and expensive district plan would be necessary.

### YOUTHFUL TEACHERS IN ONE-ROOM SCHOOLS

The foregoing statement regarding the high cost of education in small schools may be supplemented by statistics on the immaturity of teachers in these schools. The following statement was published in the *United States Daily*. It was based on data supplied by the United States Office of Education.

For the nation as a whole 23.5 per cent of all teachers of one-room schools are twenty years of age or younger.

The states of West Virginia, Louisiana, Missouri, Iowa, Michigan, and Arkansas show, respectively, the following percentages of very young teachers in one-room schools: 40.6, 38.8, 37.2, 35.3, 34.5, and 33.6. Several additional states could be cited as showing more than one-fourth of these teachers as being twenty years of age or younger.

Georgia shows 21.9 per cent of these teachers between the ages of seventeen and eighteen. Nebraska and Arkansas show, respectively, 17.2 and 12.4 per cent in these age groups.

A considerable number of the teachers of rural schools are not yet sixteen years old. For the nation as a whole, 0.2 per cent of the teachers of one-teacher schools are of this very youthful age.

Wisconsin shows 1 per cent in this group; Massachusetts and Arkansas each show 0.8 per cent; California, 0.7 per cent; and Illinois, 0.6 per cent. Twelve of the other states show persons sixteen years or younger employed in the one-teacher schools.

Other detailed evidence could be cited to show the extreme youth of a large

part of the teaching staff of one-teacher schools. The brief discussion will serve to point out that the matter of the youth of the candidate is still a problem of real concern in the rural schools and that this problem is largely limited to the smaller rural schools.

It is pertinent to question the wisdom of permitting such young teachers to be employed in the rural schools, especially when it is remembered that they are largely without supervision, that their tasks are particularly responsible and complex, and that the future of the child is so largely in their hands.

## THE USE OF THE RADIO IN GERMAN SCHOOLS

### The following statement was published in the *United States Daily*.

On the basis of data received and compiled by the German Central Office for School Radio, educational broadcasts in Germany show a significant growth. In 1930 there were 13,000 schools equipped with radio apparatus compared with about 20,000 in 1931. As there are 55,000 schools in Germany, this means that every third school now affords the use of radio in teaching.

The majority of schools that lack radio equipment are included, as would be expected, among outlying rural elementary schools, and they represent 83 per cent of the whole number which participate in the work of "school radio," as educational broadcasts for school purposes are described. The remaining 17 per cent are divided between the elementary schools in the cities, representing 10 per cent, and the secondary schools, representing 7 per cent.

The development of the German school radio on the listener's side has been maintained by the broadcasting organizations co-operating with the school-radio offerings. The number of offerings supplied for instruction in the schools has been increased correspondingly. In 1930 the total number of school broadcasts was about 1,500. The number increased to 2,000 in 1931.

These broadcasts were distributed generally as follows: 480 musical offerings, or 24 per cent; 440 broadcasts about Germany, or 22 per cent; 340 foreign-language presentations, or 17 per cent; 300 history and civic broadcasts, or 15 per cent; 240 presentations in natural science, questions in economics and technical problems, or 12 per cent; and 200 broadcasts on geographical information, or 10 per cent.

According to age of listeners, these 2,000 broadcasts ranged from 2 per cent for seven-year olds to 56 per cent for fourteen-year olds. They decreased progressively to 25 per cent for the nineteen-year olds.

Dialogues with leading personages in political or economic life led all forms of broadcasts. A total of 400, or 20 per cent of the 2,000 broadcasts, were by this method. Instructive discourse ranked second, with about 360 offerings, or 18 per cent; and experiences of world travelers, with about 300 offerings, or 15 per cent, came third. Fourteen per cent, or 280 broadcasts, were offered by pupils in music and play groups. Scenes from literature constituted 7 per cent and solos

6 per cent, while recitations from poets constituted 10 per cent among other individual offerings.

More adults listened to the school radio in 1931 than ever before, and this is regarded as most salutary.

## THE ORGANIZATION OF PUBLIC INSTRUCTION IN FOREIGN COUNTRIES

The International Bureau of Education, Geneva, Switzerland, has recently published a volume entitled *L'Organisation de l'instruction publique dans 53 pays*. The volume is the outcome of a request made by M. Herriot to the bureau when he was French Minister of Public Instruction. The data were collected in the first instance from official records and reports and, after being collated, were sent to the governments concerned for correction and for more complete details. Each state concerned was given a great deal of freedom in determining the amount of materials to be included in its report. As a result, the amount of information given by each country varies considerably.

The materials for each country are organized in four parts according to a set form. One part is devoted to the organization of instruction—kindergarten, primary, secondary, higher, and professional. This part also includes data on the training of teachers. The second and third parts are devoted to examinations and statistics, respectively. A fourth part contains a bibliography.

The volume will be especially helpful to anyone interested in arriving at an understanding of the structural organization of foreign school systems or in a comparative study of education in different parts of the world.

# SHALL WE ELIMINATE THE COMPARATIVE MARKING SYSTEM FROM THE REPORT CARD?

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The necessity for a means of official communication between the home and the school has long been recognized in American education, and, as a consequence, the common practice in school systems is to use some form of report card as a means of conveying to parents and guardians information relative to the progress being made by pupils in schools. The difficulties encountered in the preparation of a report form which is thoroughly satisfactory to all concerned are so paramount and persistent that the problem is more or less a live issue in all progressive systems.

That the typical report card has serious limitations and defects no experienced teacher or school executive would deny. That some form of report is necessary in the interest of intelligent co-operation between the home and the school is equally apparent. The problem which is continuously in the foreground with the conscientious teacher and administrator is to prepare and furnish to parents such information as will ultimately result in improved educational stimulation and guidance for the child, both at home and at school. If this principle is used as a guide and criterion for the evaluation of report-card items, it is illuminating to examine some of the basic assumptions underlying the use of the report card as typically found in American public schools.

In a recent study[1] of 628 report cards now used in 515 city school systems, it is reported that 88.89 per cent of all the rating systems in use are designed to inform parents of the relative standing of the pupil in his class in comparison with other members of the class. Of these, 46.03 per cent use letter ratings (A, B, C, D, and E);

[1] Rowna Hansen, *Report Cards for Kindergarten and Elementary Grades.* United States Office of Education Leaflet No. 41 (1931).

24.60 per cent use words ("excellent," "good," "medium," "poor," and "failing"); 15.08 use numbers (100, 90, 80, etc.); and the remainder, 3.18 per cent, employ descriptive expressions ("above average," "average," "below average"). The following three significant assumptions are basic to this system. (1) The information conveyed by the report card is accurate and reliable. (2) The best scholastic index for a child is that which shows his relative rank in comparison with the ranks of other pupils of his class and grade. (3) It is to the educational advantage of the elementary-school child that he and his parents be informed periodically of his scholastic rank in comparison with the ranks of other children in his grade or class. These three assumptions do not, of course, include all which are fundamental to the use of the typical report card, but they are sufficient for the present purposes.

The limitations and the characteristic defects of the report card in the light of these assumptions are at once apparent. Even the pupils in the elementary schools give evidence by their comments and criticisms that they realize the existence of such defects. It is common knowledge among teachers that their marks do not have the accuracy which the report form implies. Lack of accuracy is common whether a five-point or a seven-point scale is used, whether the marks are given in letters or figures. It is equally apparent that the errors in marking are frequently so large that distinctly erroneous impressions are conveyed as to the scholarship of the pupils.

The second assumption does not take account of the factors of intelligence and effort except as they affect scholarship. It is probable that these factors are so inherently associated with scholarship as to require substantial modification of this assumption before it can be accepted as valid.

The third assumption, however, is the primary consideration of this article. Is it to the educational interests of the elementary-school child that he be informed regularly of his comparative ranking with other pupils? The answer to this question should be sought in childhood reactions which grow out of this practice and their effect on total personality development. It is obvious that the receipt of a report card at regular intervals during the school career of the child may have far-reaching effects on his outlook on life. We may well consider

the positive and negative influences on character of (1) marks which are consistently high, (2) marks which are consistently low or failing, (3) marks which represent excellence when the pupil knows he has not done his best, (4) marks which show failure when the pupil knows he has done his best, or (5) marks which the pupil believes to be unfair. In this connection the reader is reminded of some of the more fundamental character traits which the modern progressive school seeks to develop in children and is asked to examine the effects on these traits of the practice of sending home periodically the comparative ratings of children. It will readily be admitted that the child (1) should acquire confidence in himself and in his own ability to succeed, (2) should develop an attitude of good will and friendliness toward others, and (3) should set up as his goals the vital objectives of education rather than high marks or other symbols of achievement.

These three character traits of children, in common with other desirable traits, are materially influenced by the use of the report card. For example, the boy who finds his chief interest and ability in dealing with concrete things rather than with long division, parsing, or the cause of the changing seasons may take home regularly a report card sprinkled with E's and D's and an occasional C. These regular reminders of his failure notwithstanding his efforts to succeed can scarcely be expected to foster in him a feeling of confidence in himself. On the contrary, the chances are overwhelming that such a notice is the master stroke in a series of experiences which tend to develop in him an inferiority complex.

The brilliant child who assumes scholastic leadership without effort is also affected negatively, although perhaps unconsciously, by the comparative markings. A feeling of superiority or scorn is more or less a natural concomitant accompanying consciousness of superior ranking when the importance of such ranking is emphasized. Nor is the child of average ability or accomplishment free from the ill effects of this marking system. The constant emphasis given to marks tends to dignify in the child's mind the symbols of accomplishment (the marks) rather than accomplishment itself and thus to shift the child's objectives from the primary goals of education to marks, honors, or other substitutes for legitimate educational objectives. This emphasis causes the overly conscientious child to sacri-

fice his mental and physical health on the altar of personal or family pride in his effort to score above his competitors. Cheating, lying, erasing the teacher's marks and substituting higher ones, forging the signature of parents, "losing" the report card, and other harmful practices are sometimes resorted to with satisfaction by children of all types of ability as a means of escaping the punishment and humiliation which are apt to follow in the wake of low marks.

It appears certain that the relation between the teacher and the child and also the relation between the parent and the child are substantially improved in the majority of cases by the elimination of comparative markings on the report card. This improved personal relationship enables teachers and parents to exert more effective influence in stimulating and guiding the educational and personality development of the child. It fosters in the school and in the home a more wholesome and joyous atmosphere in which children can live and practice positive traits of character leading to higher scholarship and more desirable qualities of citizenship.

In an effort to provide against the negative features of the comparative marking system, an experimental form of report card has been in use in the elementary schools of Salt Lake City since September, 1930. The characteristic feature of this report form is the elimination of comparative marks. If in the judgment of the teacher the child is progressing in his studies and in the citizenship qualities listed as well as might reasonably be expected in consideration of his individual ability and opportunities, his card contains no entries except those of attendance and punctuality. A clean record is evidence that the pupil is doing thoroughly satisfactory work for him, although it may be far below the quality and the amount of the work which is done by his classmates. If, however, the teacher believes that the pupil could and should do better than he has been doing, she checks the subject or the character quality in which he is deficient, as a matter of information to parents and as an invitation for parental co-operation in meeting the situation. A plus sign is used the following period to indicate that improvement has been made or another check to show that the weakness still persists. Pages 2 and 3 of the report card, which show the features mentioned, are reproduced on page 181.

It will be observed that effort rather than accomplishment be-

comes the primary factor in determining the scholarship and citizenship record of the pupil. The child with low native ability has an equal chance with the highly endowed child to make a favorable showing on this report form. If he is industrious, he does not receive official notice of his relative inferiority in scholarship during his entire attendance in the elementary school. The bright child who does not live up to his possibilities is checked although he may be the first ranking pupil in the class. Comparative ranking of the pupils in scholarship and citizenship is eliminated as an index of success, and each child is judged in terms of his own ability, effort, and personality. It is true that a pupil might receive a thoroughly satisfactory report card and still be among the weakest pupils of the class scholastically if he is doing as well as his abilities give the teacher a right to expect. The report does not presume to show how much subject matter the pupil has mastered nor his standing in comparison with other pupils of his class. This information is obtained, however, and is shown in the detailed records of test results and teacher's estimates, which are kept both in the teacher's records and in the principal's files. Parents who are interested in this type of information (some of them are) are invited to call at the school and talk with the teacher and the principal. At these conferences all the information to be obtained from the school records and the teacher's estimates, together with that which the parent can supply, is made the basis for decisions respecting the child's educational welfare.

When the experimental report card was introduced, a letter was written by Superintendent G. N. Child and delivered by the pupils of the elementary schools to their parents. In this letter the purposes of the new report card were explained, and the co-operation of the parents was requested. A gratifying response was immediately forthcoming. Principals found that the number of parents and guardians visiting the schools increased immediately after the new report card was introduced.

This report card has been in use in the elementary schools of Salt Lake City for four semesters—a sufficient length of time, it would seem, to demonstrate its practical adaptation to the problems at hand. In order that the officials might ascertain its practical success, a questionnaire which listed a number of advantages claimed

## REPORT CARD USED IN ELEMENTARY SCHOOLS IN SALT LAKE CITY

### ATTENDANCE AND SCHOLARSHIP

| Periods | 1st Semester | | | 2nd Semester | | |
|---|---|---|---|---|---|---|
| | 1st | 2nd | 3rd | 1st | 2nd | 3rd |
| School Days | | | | | | |
| Days Absent | | | | | | |
| Times Tardy | | | | | | |
| Reading | | | | | | |
| Writing | | | | | | |
| Spelling | | | | | | |
| Language | | | | | | |
| Social Studies (Geog., Hist., Civ.) | | | | | | |
| Nature | | | | | | |
| Arithmetic | | | | | | |
| Health Education | | | | | | |
| Art | | | | | | |
| Music | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |

1. No mark in scholarship means that progress is satisfactory.

2. A mark like this (√) means that improvement is desirable in the subject or trait checked.

3. A mark like this (+) signifies improvement during the current period.

Parents should confer with the principal or teacher if the child's report continues to show unsatisfactory results.

### CITIZENSHIP

| Periods | 1st Semester | | | 2nd Semester | | |
|---|---|---|---|---|---|---|
| | 1st | 2nd | 3rd | 1st | 2nd | 3rd |
| Deportment | | | | | | |
| Application | | | | | | |
| Attitude toward school | | | | | | |
| Courtesy | | | | | | |
| Self-reliance | | | | | | |
| Neatness in— | | | | | | |
| 1. Desks and books | | | | | | |
| 2. Written work | | | | | | |
| 3. Appearance | | | | | | |
| Fairness in— | | | | | | |
| 1. Work | | | | | | |
| 2. Play | | | | | | |

Kindergarten children will receive marks in attendance only the first semester and in attendance and citizenship the second semester.

First-grade children will receive marks in attendance and citizenship the first twelve weeks and thereafter in attendance, citizenship, and scholarship.

### PROMOTION RECORD

Date .....

.....is promoted to the

..... Grade

..... Teacher

..... Principal

for the new report form was distributed among the teachers and the principals after the third semester. Replies were received from 513 teachers and 28 principals. No names were attached to the returns from teachers. The following excerpts taken from the questionnaire show the directions to teachers and the items on which they were asked to express opinions.

Following are a number of statements which purport to show the advantages to be obtained from the practice of using the check (✓), the plus sign (+), and other symbols of our new report card rather than the letters A, B, C, D, and E as a means of making an official report of the pupil's progress to parents.

It is desired that each person answering the questionnaire examine these claims carefully and express a personal evaluation of them by inserting the appropriate figure on the line following the statement. The figures will signify respectively meanings as given in the following code:

1. Complete disapproval.
2. Sometimes true though not often.
3. Sometimes true, sometimes not true. The two systems have equal advantages.
4. Generally true, exceptions are few.
5. Unquestionably true.

The names of teachers answering the questionnaire need not be indicated. The signature of the principal, however, is desired.

QUESTIONNAIRE

1. The new report card protects the sensitive feelings of the slow-learning child and thereby fosters an attitude of confidence rather than one of inferiority._____

2. The child of superior ability who attains scholastic leadership with but little effort is less likely to assume an attitude of superiority and intolerance because he cannot advertise himself by showing to his associates superior marks._____

3. By eliminating the use of letters the child is more readily led to adopt as his own goals the intrinsic objectives of the school rather than to seek primarily for marks or other symbols of achievement._____

4. Jealousy, envy, and other antisocial traits may be more easily curbed with the elimination of comparative marking._____

5. Since the elimination of comparative markings on the pupil's report card relieves the teacher of social pressure in a marked degree, the scholastic ratings which are entered into the permanent records of the school are more accurate and valid than formerly._____

6. The elimination of comparative markings fosters the mental and physical health of the over-conscientious child irrespective of his ability by withholding the excessive stimulation or depression which the markings give such children._____

7. The morale of the typical family life is improved by the new type of report card because it does not furnish the concrete information which often causes parents to make unreasonable demands upon children and which is a frequent cause of family misunderstanding._____

8. Parents are in general pleased with the new report card._____

9. The advantages of the new report card, in consideration of the school's program for the total personality development of the child, are outstanding and warrant its continuance._____

A compilation of the returns from the questionnaire are given in Table I. It is evidently the opinion of the teachers that the experimental report card has many practical advantages over the traditional comparative system. The opinion of the principals is even more favorable to the new system than that of the teachers.

TABLE I

DISTRIBUTIONS OF REPLIES MADE BY 513 TEACHERS AND 28 PRINCIPALS TO EACH OF NINE QUESTIONNAIRE STATEMENTS CONCERNING EFFECTIVENESS OF EXPERIMENTAL REPORT CARD

| STATEMENT | CODE NUMBER | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | | 2 | | 3 | | 4 | | 5 | |
| | Number | Percentage | Number | Percentage | Number | Percentage | Number | Percentage | Number | Percentage |
| Teachers: | | | | | | | | | | |
| 1..... | 3 | 0.6 | 21 | 4.1 | 29 | 5.7 | 160 | 31.2 | 299 | 58.4 |
| 2..... | 3 | 0.6 | 30 | 5.9 | 33 | 6.4 | 156 | 30.5 | 290 | 56.6 |
| 3..... | 11 | 2.2 | 43 | 8.5 | 89 | 17.6 | 194 | 38.4 | 168 | 33.3 |
| 4..... | 2 | 0.4 | 28 | 5.5 | 25 | 4.9 | 141 | 27.6 | 315 | 61.6 |
| 5..... | 73 | 14.4 | 59 | 11.7 | 85 | 16.8 | 112 | 22.1 | 177 | 35.0 |
| 6..... | 7 | 1.4 | 36 | 7.1 | 37 | 7.2 | 138 | 27.0 | 293 | 57.3 |
| 7..... | 9 | 1.8 | 44 | 8.7 | 52 | 10.3 | 168 | 33.3 | 232 | 45.9 |
| 8..... | 25 | 5.2 | 60 | 12.4 | 84 | 17.4 | 253 | 52.6 | 60 | 12.4 |
| 9..... | 16 | 3.2 | 9 | 1.8 | 32 | 6.3 | 74 | 14.7 | 372 | 74.0 |
| Total.. | 149 | 3.3 | 330 | 7.3 | 466 | 10.2 | 1,396 | 30.7 | 2,206 | 48.5 |
| Principals: | | | | | | | | | | |
| 1..... | 0 | 0.0 | 0 | 0.0 | 1 | 3.6 | 6 | 21.4 | 21 | 75.0 |
| 2..... | 0 | 0.0 | 1 | 3.6 | 1 | 3.6 | 10 | 35.7 | 16 | 57.1 |
| 3..... | 0 | 0.0 | 1 | 3.6 | 2 | 7.1 | 14 | 50.0 | 11 | 39.3 |
| 4..... | 0 | 0.0 | 0 | 0.0 | 4 | 14.8 | 5 | 18.5 | 18 | 66.7 |
| 5..... | 2 | 7.1 | 2 | 7.1 | 5 | 17.9 | 8 | 28.6 | 11 | 39.3 |
| 6..... | 0 | 0.0 | 0 | 0.0 | 2 | 7.1 | 6 | 21.4 | 20 | 71.5 |
| 7..... | 0 | 0.0 | 0 | 0.0 | 1 | 3.7 | 12 | 44.5 | 14 | 51.8 |
| 8..... | 0 | 0.0 | 1 | 3.7 | 7 | 25.9 | 12 | 44.5 | 7 | 25.9 |
| 9..... | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 3 | 10.7 | 25 | 89.3 |
| Total.. | 2 | 0.8 | 5 | 2.0 | 23 | 9.3 | 76 | 30.5 | 143 | 57.4 |

## CONCLUSION

The tendency of progressive public schools during the past decade has been decidedly in the direction of an all-inclusive program which sponsors the total personality development of the individual pupil, including, in addition to the fundamental tool subjects, the desirable habits and attitudes which make for character and citizenship. This broader program of the schools should be reflected in the report card, which is the official method of communication between the home and the school. Unless reform in the report card is made, a countercurrent of marked influence may be affecting negatively the character traits of children. The comparative marking system was developed during a period in our educational history when the emphasis was primarily on "scholarship" in the limited field of the three R's. In its practical effects the influence of the old marking system runs counter to the most fundamental objectives of modern, progressive schools. It appears from studies made in this field that the typical report card now in use in American cities is still of the traditional formal type. It would seem that this problem should be given renewed experimental study by teachers and administrators. The experiment in Salt Lake City may be a step in the right direction.

# TYPES OF ERRORS AND QUESTIONABLE HABITS OF WORK IN MULTIPLICATION

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## PURPOSE

The purpose of this article is to report the results of a study determining the types, frequency, and probable causes of the errors and the questionable habits of work used by children in their responses to exercises involving the mechanical aspects of multiplication. The term "error" is used throughout the study to mean any method of work used by children in multiplication by which incorrect responses to the exercises are given. The term "questionable habit of work" is used to mean any questionable method of work which may produce the wrong response indirectly or which may be a time-consuming process. The method of the study involved an intensive analysis of the mental processes revealed by pupils' responses to the exercises of an inventory test and by observations made during an interview with each pupil whose methods of work could not be detected from the results obtained on the test.

## PROCEDURE

The investigation deals with the responses of children in typical schools of five public-school systems in Michigan cities having populations of at least twenty-five thousand. The cases selected for diagnosis were limited to children who were able to use the basic multiplication combinations in abstract problem form. Their ability was determined by the Compass Diagnostic Tests in Arithmetic, Test III, Form A. In most of the schools children in the low-fourth to the high-sixth grade, inclusive, were tested. The testing program included 2,577 children. Of this number, only 2,110 were studied intensively as the papers for the other 467 pupils indicated achievement free from error and at best ten points above the norms for the grades under consideration. Children whose methods of work were studied

intensively may be divided into two groups: (1) the relatively small number of children whose methods of work were revealed from an analysis of the written responses and (2) those making low scores on the inventory test to whom it was necessary to give an interview to determine the mental processes involved in the incorrect or questionable responses.

Before the interviews were held, a tentative check list of errors and questionable habits was made as an aid in their classification. In the preparation of this list the most frequent errors and questionable habits appearing in the studies of Buswell and John,[1] Brueckner,[2] and Lazar[3] were noted. The list was revised from time to time during the study. A complete inventory of errors and questionable habits of work was derived from the interviews.

Since the success of a diagnostic study depends primarily on the technique used in the interview, special care was given to this phase of the investigation. An effort was made to secure objective cooperation of the pupils, and emphasis was placed on the method of work rather than on the results obtained. Throughout the interviews the children were asked to solve aloud the exercises on the work sheet given them at the beginning of the interview. If a child showed any hesitancy in his work, he was asked how he had arrived at his answer. For example, in multiplying $327 \times 29$, a child hesitating at the combination $9 \times 7$ was asked how he obtained the result. If the oral explanation was not clear to the experimenter, the child was requested to illustrate his method of work. Other similar number situations were presented in order to determine whether the habits of work observed were fixed habits.

## EXPLANATION OF ERRORS AND HABITS

A number of the errors and the questionable habits of work listed in this study have been reported in previous diagnostic studies.

[1] G. T. Buswell, with the co-operation of Lenore John, *Diagnostic Studies in Arithmetic*, p. 138. Supplementary Educational Monographs, No. 30. Chicago: Department of Education, University of Chicago, 1926.

[2] Leo J. Brueckner, *Diagnostic and Remedial Teaching in Arithmetic*, pp. 110–60. Philadelphia: John C. Winston Co., 1930.

[3] May Lazar, *Diagnostic and Remedial Work in Arithmetic Fundamentals*, pp. 25–55. New York: Bureau of Reference, Research, and Statistics, Board of Education, 1928.

Some of these errors and habits are similar in form to those of the present study but are named differently. For example, the use of lower combinations and addition to obtain higher combinations is similar to the use of the "split multiplier" reported by Buswell and John[1] in that a child desiring the answer to the combination $7\times9$ said, "$4\times9+3\times9$." This method, however, represents the most advanced stage in using lower combinations and addition to obtain the higher combinations. Many children used some such cumbersome method as $3\times18+9$ to obtain answers to the combination $7\times9$. This process was carried on mentally by some children and written as side work by others.

Most of the errors and habits are obvious from the names given them. A few, however, need explanation. For example, in Habit 13 listed in Table I, using a special device to obtain the combinations for the table of nine's, a child wrote the column 9, 8, 7, etc., then dropped one place and at the left wrote 1, 2, 3, etc., as shown here. If he needed $6\times9$, he began at 9 and counted down 6 places. A similar case has been reported by Evans.[2]

| | |
|---|---|
| | 9 |
| 1 | 8 |
| 2 | 7 |
| 3 | 6 |
| 4 | 5 |
| 5 | 4 |
| 6 | 3 |
| 7 | 2 |
| 8 | 1 |
| 9 | 0 |

In Habit 22 shown in Table II, forming a mental image in adding the combination and carried number, the children visualized the problem $\begin{array}{r}45\\+8\\\hline\end{array}$ and added $8+5=13$ and $4+1=5$.

In multiplying backwards, Habit 41 shown in Table III, the children reversed the process as indicated in the following example.

| | |
|---|---|
| 64 | $0\times6=6$ |
| $\times30$ | $0\times4=4$ |
| 64 | $3\times6=18$ |
| 120 | $3\times4=12+8=20$ |
| 184 | |

[1] G. T. Buswell, with the co-operation of Lenore John, *op. cit.*, p. 178.

[2] Roy Evans, "Remedial Cases in Arithmetic: Case 2," *Peabody Journal of Education*, VII (January, 1930), 213.

## RESULTS

A careful analysis of the mental processes of 2,110 children in their responses to exercises in multiplication revealed sixty-eight errors and questionable habits of work. Of this number, approximately 58 per cent were errors, and the remaining 42 per cent were questionable habits of work. Space does not permit the presentation of the com-

TABLE I

ERRORS AND HABITS IN OBTAINING COMBINATIONS IN MULTIPLICATION RECORDED FOR 2,577 PUPILS IN GRADES IV–VI

| ERROR OR HABIT | PERCENTAGE OF PUPILS IN EACH GRADE | | | | | |
|---|---|---|---|---|---|---|
| | Low-fourth (327)* | High-fourth (480) | Low-fifth (453) | High-fifth (473) | Low-sixth (479) | High-sixth (365) |
| 1. Error in combinations | 29.1 | 17.5 | 33.6 | 25.2 | 30.5 | 21.4 |
| 2. Higher combinations unknown | 13.2 | 4.6 | 17.4 | 12.3 | 10.6 | 8.2 |
| 3. Repeats tables from known combination | 6.7 | 5.2 | 6.4 | 6.8 | 6.1 | 4.7 |
| 4. Lower combinations unknown | 4.3 | 0.6 | 6.0 | 1.5 | 1.7 | 0.5 |
| 5. Repeats tables from first | 3.7 | 1.9 | 3.1 | 0.8 | 2.9 | 0.8 |
| 6. Wrong combination fixed | 3.4 | 1.9 | 3.1 | 2.5 | 5.6 | 3.0 |
| 7. Counts from known combination | 2.5 | 2.3 | 2.9 | 1.7 | 5.0 | 2.2 |
| 8. Uses lower combination and addition | 2.5 | 1.9 | 8.4 | 11.8 | 12.3 | 11.5 |
| 9. Sets down columns and adds | 1.5 | 0.6 | 3.5 | 2.5 | 3.1 | 2.7 |
| 10. Depends on tables | 0.6 | 0.4 | 0.7 | 0.2 | 0.4 | 0.0 |
| 11. Makes marks and adds | 0.3 | 0.2 | 0.9 | 0.6 | 0.2 | 0.5 |
| 12. Counts on fingers from known combination | 0.3 | 1.5 | 1.1 | 2.1 | 2.9 | 3.0 |
| 13. Uses special device for nine's | 0.0 | 0.2 | 0.0 | 0.0 | 0.0 | 0.0 |
| 14. Makes dots in adding columns | 0.0 | 0.0 | 0.4 | 0.4 | 0.0 | 0.5 |
| 15. Subtracts from known combination | 0.0 | 0.0 | 0.2 | 0.6 | 1.7 | 1.1 |
| 16. Multiplication by addition | 0.0 | 0.0 | 0.2 | 0.2 | 0.0 | 0.0 |

* The numbers in parentheses represent the total number of pupils tested in the grade.

plete data. The series of tables given illustrate a complete inventory of the errors and questionable habits distributed according to grade levels.

The errors and habits used by children in obtaining the multiplication combinations are shown in Table I. From the standpoint of frequency, errors in combinations (Error 1), lack of knowledge of the higher combinations (Error 2), and use of lower combinations and addition (Habit 8) appear to be the most significant, comprising approximately 50 per cent of the total group. The remaining errors and questionable habits are distributed among thirteen errors or

habits of relatively low frequency, each indicating significance in the case of only a few children.

The influence of grade level is apparent in only a few of the errors or habits listed in Table I. High frequency of errors in combinations (Error 1) is conspicuous throughout in spite of the slight decrease at the higher grade levels. The error is made in the low-fourth grade

TABLE II

ERRORS AND HABITS IN CARRYING IN MULTIPLICATION RECORDED FOR 2,577 PUPILS IN GRADES IV–VI

| ERROR OR HABIT | PERCENTAGE OF PUPILS IN EACH GRADE | | | | | |
|---|---|---|---|---|---|---|
| | Low-fourth (327)* | High-fourth (480) | Low-fifth (453) | High-fifth (473) | Low-sixth (479) | High-sixth (365) |
| 17. Sets down carried number | 17.1 | 15.8 | 24.7 | 30.0 | 30.3 | 35.1 |
| 18. Counts in getting carried number | 15.6 | 8.5 | 9.1 | 9.5 | 9.4 | 8.5 |
| 19. Error in carrying | 8.9 | 6.9 | 11.5 | 9.3 | 12.9 | 6.0 |
| 20. Fails to carry | 8.0 | 4.0 | 4.0 | 2.7 | 3.3 | 3.0 |
| 21. Carries wrong number | 7.3 | 5.8 | 5.7 | 4.0 | 6.1 | 4.4 |
| 22. Forms mental image of combinations | 2.8 | 0.8 | 1.8 | 4.0 | 5.8 | 4.7 |
| 23. Counts on fingers to get number carried | 2.1 | 3.1 | 2.4 | 2.1 | 2.7 | 2.2 |
| 24. Puts number to be carried in partial product | 0.6 | 1.0 | 1.3 | 0.2 | 0.8 | 0.5 |
| 25. Reverses number to be set down and carried | 0.6 | 1.0 | 1.8 | 0.8 | 0.6 | 0.3 |
| 26. Sets down combination and carried number and adds | 0.3 | 0.4 | 0.7 | 0.6 | 0.8 | 1.4 |
| 27. Carries smaller number | 0.3 | 0.0 | 0.0 | 0.2 | 0.2 | 1.1 |
| 28. Secures right combination but sets down wrong number | 0.0 | 1.2 | 1.1 | 0.4 | 0.4 | 0.8 |
| 29. Builds units' digit to tens' | 0.0 | 0.2 | 2.0 | 1.9 | 2.1 | 3.0 |
| 30. Makes dots in adding carried number | 0.0 | 0.0 | 0.0 | 0.2 | 0.6 | 0.5 |

* The numbers in parentheses represent the total number of pupils tested in the grade.

by 29.1 per cent of the pupils and in the high-sixth grade by 21.4 per cent. The percentage of pupils exhibiting lack of knowledge of the higher combinations (Error 2) is 13.2 in the low-fourth grade, decreases to 4.6 in the high-fourth grade, increases to 17.4 in the low-fifth grade, but shows a noticeable decrease in the remaining grades. Use of lower combinations and addition (Habit 8) shows an increase in percentages from 2.5 in the low-fourth grade to 11.5 in the high-sixth grade. The noticeable decrease in the precentages of pupils exhibiting these errors and habits in the high-fourth grade and the

increase in the low-fifth grade are probably caused by teaching factors. In most systems the teaching of arithmetic in the low-fourth grade is centered on the mastery of the multiplication process. This mastery is somewhat lost in the low-fifth grade when the process of division is stressed.

Carrying in multiplication, presented in Table II, provides ample opportunity for the formation of questionable habits, involving, as

TABLE III

IRREGULAR ERRORS AND HABITS IN MULTIPLICATION RECORDED FOR 2,577 PUPILS IN GRADES IV–VI

| ERROR OR HABIT | PERCENTAGE OF PUPILS IN EACH GRADE | | | | | |
|---|---|---|---|---|---|---|
| | Low-fourth (327)* | High-fourth (480) | Low-fifth (453) | High-fifth (473) | Low-sixth (479) | High-sixth (365) |
| 31. Multiplies digits in multiplicand by corresponding digits in multiplier... | 13.1 | 2.1 | 3.3 | 3.2 | 1.7 | 1.1 |
| 32. Uses multiplicand as multiplier..... | 4.3 | 3.3 | 6.6 | 5.9 | 5.4 | 5.2 |
| 33. Does not multiply all digits..... | 4.0 | 2.9 | 4.6 | 4.2 | 5.4 | 3.3 |
| 34. Can multiply by only one digit..... | 2.8 | 1.0 | 1.5 | 0.0 | 0.0 | 0.0 |
| 35. Multiplies the carried number..... | 1.8 | 0.8 | 0.7 | 0.2 | 1.5 | 0.0 |
| 36. Does not multiply by all digits..... | 0.6 | 2.3 | 4.9 | 1.9 | 1.3 | 5.2 |
| 37. Multiplies by same digit twice..... | 0.6 | 1.0 | 0.9 | 1.1 | 1.0 | 0.3 |
| 38. Can multiply by only two digits.... | 0.6 | 1.2 | 0.7 | 2.5 | 2.1 | 0.5 |
| 39. Multiplies by carried number..... | 0.0 | 0.2 | 0.0 | 0.4 | 0.2 | 0.0 |
| 40. In a three-digit multiplier, multiplies by two digits and adds, then by third digit and adds..... | 0.0 | 0.2 | 0.7 | 0.2 | 0.0 | 0.0 |
| 41. Multiplies backwards..... | 0.0 | 0.0 | 0.2 | 0.0 | 0.8 | 0.0 |

* The numbers in parentheses represent the total number of pupils tested in the grade.

it does, the manipulation of numbers which do not appear on the written page. The most generally practiced of the time-consuming habits of this group are the setting-down of the carried number (Habit 17) and counting to obtain the carried number (Habit 18). Of the error-producing habits, errors in carrying (Error 19), failure to carry (Error 20), and carrying the wrong number (Error 21) show the highest frequencies. A decided increase at the higher grade levels occurs in the setting-down of the carried number (Habit 17), the percentage ranging from 17.1 in the low-fourth grade to 35.1 in the high-sixth grade. On the other hand, counting to obtain the carried number (Habit 18) displays the highest frequency in the lowest grade. The percentages of pupils making errors in carrying at the

various grade levels tend to be somewhat erratic. The fluctuations in percentages in the high-fourth, low-fifth, and low-sixth grades cannot be explained from the data available. The remaining errors and questionable habits of this group are of low frequency and display no marked change at any grade level.

The irregular errors and questionable habits used in multiplication, other than those used in obtaining the basic multiplication

TABLE IV

ERRORS AND HABITS IN THE MISUSE OF ZERO IN MULTIPLICATION RECORDED FOR 2,577 PUPILS IN GRADES IV–VI

| ERROR OR HABIT | PERCENTAGE OF PUPILS IN EACH GRADE | | | | | |
|---|---|---|---|---|---|---|
| | Low-fourth (327)* | High-fourth (480) | Low-fifth (453) | High-fifth (473) | Low-sixth (479) | High-sixth (365) |
| 42. Sets down rows of zeros | 25.4 | 31.0 | 32.0 | 36.4 | 38.8 | 37.5 |
| 43. Gives zero value of one in multiplier | 15.6 | 12.7 | 21.4 | 17.5 | 17.1 | 10.4 |
| 44. Error in placing partial product when units' digit in multiplier is zero | 4.6 | 11.7 | 15.9 | 15.4 | 17.7 | 24.1 |
| 45. Gives zero value of one in multiplicand | 2.1 | 1.7 | 3.8 | 4.9 | 3.1 | 2.2 |
| 46. Error in carrying into zero | 1.2 | 0.0 | 1.3 | 1.5 | 0.8 | 0.3 |
| 47. Placing partial product when units' digit is zero in product above | 0.6 | 0.6 | 0.4 | 0.0 | 0.2 | 0.0 |
| 48. Omits units' zero in multiplier | 0.3 | 1.7 | 4.0 | 4.7 | 3.5 | 7.1 |

* The numbers in parentheses represent the total number of pupils tested in the grade.

facts, are presented in Table III. Relatively low percentages are displayed at all grade levels in this table except multiplying the digits in the multiplicand by corresponding digits of the multiplier (Habit 31), which shows a comparatively high frequency in the low-fourth grade. The high frequency in this grade is probably a result of the fact that many of the children could multiply by only one digit, even though the process involving multipliers of two or more digits had been taught in the schoolrooms from which these cases were taken.

The errors and habits involving the misuse of the zero are shown in Table IV. Setting down rows of zeros (Habit 42) is practiced by approximately one-third of the pupils tested. Of the error-forming habits, giving zero the value of one in the multiplier (Error 43) displays the highest frequency. At all grade levels the frequency of

this habit is higher than the frequency of giving zero the value of one in the multiplicand (Error 45). The practice of writing rows of zeros tends to increase with the grade level. The percentage of pupils exhibiting this habit is 25.4 in the low-fourth grade and increases to 37.5 in the high-sixth grade. Error in placing the partial product when the units' digit of the multiplier is zero (Error 44) also presents a marked tendency to increase in frequency in the higher grades.

TABLE V

ERRORS AND HABITS IN PLACING PARTIAL PRODUCTS RECORDED FOR 2,577 PUPILS IN GRADES IV–VI

| ERROR OR HABIT | PERCENTAGE OF PUPILS IN EACH GRADE | | | | | |
|---|---|---|---|---|---|---|
| | Low-fourth (327)* | High-fourth (480) | Low-fifth (453) | High-fifth (473) | Low-sixth (479) | High-sixth (365) |
| 49. Error in placing partial product..... | 4.6 | 7.1 | 7.9 | 5.1 | 3.5 | 4.1 |
| 50. Keeps columns straight..... | 0.3 | 1.7 | 0.7 | 1.1 | 0.2 | 0.0 |
| 51. Omits left digit in partial product... | 0.0 | 0.4 | 0.4 | 0.4 | 0.0 | 0.5 |
| 52. Double indentation of partial products..... | 0.0 | 0.0 | 0.4 | 0.2 | 0.0 | 0.0 |
| 53. Indents partial product to right.... | 0.0 | 0.0 | 0.2 | 0.0 | 0.2 | 0.0 |
| 54. Writes two partial products with one-digit multiplier..... | 0.0 | 0.0 | 0.2 | 0.2 | 1.3 | 0.0 |

* The numbers in parentheses represent the total number of pupils tested in the grade.

The percentage of children exhibiting this habit rises from 4.6 in the low-fourth grade to 24.1 in the high-sixth grade. The remaining errors of this group occur in low frequencies through all the grades.

The frequency of occurrence of the errors resulting from the incorrect placement of the partial products is given in Table V. These errors are of relatively low frequency at all grade levels. Error in placing the partial product (Error 49) reaches its highest point in the low-fifth grade and decreases in the higher grades.

Table VI reveals the difficulties experienced by children in addition of the partial products. These errors and habits are not particularly frequent in any grade. Setting down the carried number (Habit 61) increases from 0.3 per cent in the low-fourth grade to 12.9 per cent in the high-sixth grade. Error in addition combinations (Error 55) displays a tendency to increase through the low-fifth grade and to decrease throughout the following grades. The

percentages of children exhibiting the remaining habits of this group are relatively equal and show no marked changes at the different grade levels.

TABLE VI

ERRORS AND HABITS IN ADDING PARTIAL PRODUCTS RECORDED FOR 2,577 PUPILS IN GRADES IV–VI

| ERROR OR HABIT | PERCENTAGE OF PUPILS IN EACH GRADE | | | | | |
|---|---|---|---|---|---|---|
| | Low-fourth (327)* | High-fourth (480) | Low-fifth (453) | High-fifth (473) | Low-sixth (479) | High-sixth (365) |
| 55. Error in addition combinations | 3.4 | 3.7 | 6.6 | 6.3 | 3.1 | 1.9 |
| 56. Counts to get combinations | 0.9 | 1.7 | 1.8 | 1.9 | 1.9 | 0.8 |
| 57. Fails to add partial products | 0.6 | 0.2 | 0.0 | 0.2 | 0.6 | 0.3 |
| 58. Error in carrying | 0.6 | 1.0 | 1.5 | 1.3 | 1.3 | 1.1 |
| 59. Omits digit in adding | 0.6 | 0.4 | 0.2 | 0.6 | 0.2 | 0.0 |
| 60. Groups numbers to add | 0.6 | 0.8 | 1.8 | 2.5 | 2.3 | 0.8 |
| 61. Sets down carried number | 0.3 | 3.3 | 7.5 | 6.1 | 7.1 | 12.9 |
| 62. Counts on fingers to get combinations | 0.0 | 0.4 | 1.1 | 1.7 | 1.7 | 0.5 |
| 63. Makes dots in adding partial products | 0.0 | 0.2 | 1.3 | 2.9 | 3.5 | 3.3 |
| 64. Fails to carry | 0.0 | 0.0 | 0.2 | 0.2 | 0.0 | 0.0 |
| 65. Adds diagonally | 0.0 | 0.0 | 0.0 | 0.2 | 0.0 | 0.0 |

* The numbers in parentheses represent the total number of pupils tested in the grade.

TABLE VII

MISCELLANEOUS ERRORS AND HABITS IN MULTIPLICATION RECORDED FOR 2,577 PUPILS IN GRADES IV–VI

| ERROR OR HABIT | PERCENTAGE OF PUPILS IN EACH GRADE | | | | | |
|---|---|---|---|---|---|---|
| | Low-fourth (327)* | High-fourth (480) | Low-fifth (453) | High-fifth (473) | Low-sixth (479) | High-sixth (365) |
| 66. Confuses processes of multiplication and addition | 3.1 | 1.7 | 1.5 | 0.8 | 0.4 | 0.0 |
| 67. Superfluous use of language | 3.1 | 1.0 | 1.3 | 0.0 | 1.3 | 0.0 |
| 68. Confuses processes of multiplication and subtraction | 0.3 | 0.2 | 0.7 | 0.2 | 0.0 | 0.0 |

* The numbers in parentheses represent the total number of pupils tested in the grade.

The habits not readily classifiable have been summarized in Table VII as miscellaneous habits. Although they do not occur frequently, they have significance in the study of individual children.

The tables presented indicate the variation of the errors and questionable habits when distributed according to grades. Similar dis-

tributions were made according to grades in each of the five cities, according to intelligence scores, and according to achievement scores made on the Compass test. The distributions indicated clearly that the types, frequency, and probable causes of the errors and questionable habits of work are significantly related to certain factors involving learning.

## CONCLUSIONS

The study reveals five facts of significance to teachers: (1) Relatively few type errors and questionable habits of work could be analyzed with certainty from the written responses. (2) All errors and questionable habits, regardless of frequency, have significance for the individual child. (3) The errors and questionable habits persist throughout the higher grades. (4) The tendency of children is to evolve questionable processes of solution when skills are employed before the basic concepts are formed. (5) The percentages of errors and questionable habits vary significantly at the different levels of intelligence and achievement in each grade.

The variations in the occurrence of the errors and habits at all levels of intelligence and achievement throughout the grades indicate the need for the use of a continuous diagnostic program by the classroom teacher.

# THE INTELLIGENCE OF TEACHERS

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During a recent discussion of the findings of the Wisconsin Colleges Co-operative Testing Program, it was pointed out that those high-school Seniors who had disclosed their intention of entering the Wisconsin State Teachers Colleges had a median intelligence percentile of 52 and that they might be described as the "run of the mine." Was this an isolated and erratic finding? A little research revealed that it was not; such findings are the rule.

Do such findings have any parallel in the public estimate of teachers? There is some evidence that such is the case. The old-time, good-natured gibe, "He tried everything else and failed and then took up school teaching," has a sociological as well as an economic basis. Whitney states that "to a certain degree popular opinion has placed the elementary teacher in our public-school systems on a rather low level of intelligence" (**17**: 3)[1] and that a number of investigations since the World War have seemed to support that opinion. Bode (**2**) says that the ideal of the average American citizen is the man of affairs; Americans cannot understand why a normal, able-bodied man should wish to spend his life in teaching. "A population that bestows the title of 'professor' on corn-doctors and parachute performers . . . . is not greatly burdened with reverence for scholarship" (**2**: 228).

Although it is worth while and interesting to consider the popular view, the writer is not one of those who believe unreservedly that "a million people cannot be wrong." Are there any outstanding students of the science of education who hold, even by implication, a view similar to that reflected by popular opinion? Wood seems to be very positive that there is a one-to-one correlation between intelligence scores and college success. He writes:

[1] The numbers in parentheses refer to the bibliography appearing at the end of the article. In case of quotations page references are also given.

In whatever way we interpret these tables, we see that high scores on the intelligence test mean high achievement in college, and vice versa; that low scores in one mean low scores in the other [19: 69].

We have shown thus far that the intelligence examination predicts college success very nearly as well as college success . . . . predicts itself from one semester to another or from one year to another [19: 139].

If Wood's statement of the value of the intelligence quotient as a predictive measure of college success is correct, then the fact that the medians of their intelligence scores usually class the students entering teachers' colleges as the run of the mine would imply that the schools are being manned by persons who at best can accomplish only mediocre success in college. The social implications of such a condition are various. Jennings (7), a leading biologist, assures us that the course of biological evolution is so slow, even if directed by the science of eugenics, that it can furnish little aid in the problem of keeping pace with the changing needs of society.

Certainly, therefore, every other remedy that has possibilities should be tried while we are waiting for eugenics to do its perfect work. And it is probable that changes in environment—changes in treatment of infancy, in education, in tradition . . . . can do much more for the ills of society than can be done through direct attempts to change the genetic constitution of the population [7: 246].

The school, then, is the agency to which we must look, and the teacher, we may assume, is the most important factor in the school. The implications are obvious. Those who select the entrants to the teachers' colleges will be interested in setting up some machinery which will assure a better selected group of students than these schools have secured in the past. The great body of teachers at work in the field will, both for reasons of personal pride and for the effect it may have on the problems of employment and salaries, wish to see the raw material of the teacher-training institutions more skilfully appraised and more carefully selected than formerly.

Some evidence as to the "median" intelligence of those persons wishing to enter teachers' colleges or those already enrolled in the courses is available. In the Wisconsin Colleges Co-operative Testing Program (18) in 1929, the intelligence scores and occupational choices of more than sixteen thousand high-school pupils were secured. The method of comparison in this study was by "psychological percentiles" rather than by point scores or intelligence quotients.

Among twenty-two occupational choices journalism ranked first with respect to the intelligence scores of the pupils choosing that occupation. The quartile points of those choosing journalism were as follows: first quartile, 56; median, 81; and third quartile, 94. Teaching ranked tenth with the following scores: first quartile, 28; median, 52; and third quartile, 76. "Beauticians" were last with the following scores: first quartile, 13; median, 30; and third quartile, 56. These comparisons give a sampling of the abilities of those declaring their intentions of attending college for the purpose of preparing for various professions.

TABLE I

SELECTIVE INFLUENCE OF DIFFERENT INSTITUTIONS SHOWN BY MEDIAN PERCENTILE RANKS OF INTELLIGENCE SCORES SECURED IN WISCONSIN COLLEGES CO-OPERATIVE TESTING PROGRAM

| INSTITUTION | MEDIAN PERCENTILE RANK | |
|---|---|---|
| | Boys | Girls |
| University of Wisconsin | 75 | 76 |
| Wisconsin colleges | 64 | 76 |
| Wisconsin State Teachers Colleges | 48 | 53 |
| Out-of-state colleges | 73 | 71 |

What of those who actually entered college in the following semester? Was the difference in intelligence percentile rank still apparent? The figures in Table I clearly indicate the apparent intellectual inferiority of the raw material of the teachers' colleges. Wood (**19**: 41) offers a table of means and sigmas of the scores made on the Thorndike Intelligence Examination for College Entrance by prospective entrants or students in nine widely scattered institutions of higher learning in the United States and a preparatory school in Canada. The medians range from 52 to 79, and the Freshmen women at the normal school in Trenton, New Jersey (the one teachers' college in the list), rank eighth among the nine higher schools. It may seem startling that the academic failures during the years 1919–22 at Columbia College had a median intelligence score of 69, while the median of the New Jersey prospective teachers was only 64.

Odell concluded from an investigation of college students that "those [Freshmen] attending the University of Illinois and other large universities and technical schools possess on the whole mental ability well above the average, whereas those entering teachers' colleges and professional, art, and music schools are decidedly below the average . . . . [of] the whole group" (**9**: 45).

Book (**3**) made a state-wide survey of the high-school Seniors in Indiana. In his chapter entitled "Intelligence and Vocational Choice" he presents graphs showing the scores made by the middle 50 per cent of the boys and girls electing various vocations, and he says:

> It may readily be seen (from Figure 29) that the group of boys selecting science, the ministry, and journalism ranks ahead of all other groups. . . . . Law, engineering, and teaching occupy a position about midway between these other occupations. . . . .
>
> The girls selecting journalism, law, and social service rank higher than any other occupational group. The groups selecting clerical work, nursing, and the professions of music and art rank lowest on the intelligence tests; the groups selecting medicine, teaching, and home-making occupy positions about midway between" [**3**: 124–25].

Odell (**10**) in the first section of his report on the intelligence of high-school Seniors presents tables showing the relations between vocational choices and intelligence-score medians. Among fifteen occupations the intelligence scores of those choosing teaching gave that profession a rank of 13.5 in the case of the boys and 10.5 in the case of the girls.

Further illustrations might be included, but enough have been given to show the general tendency in the studies of the relation of intelligence to vocational choice. What interpretation should be made of the data presented showing that the raw material in teachers' colleges is only the "run of the mine" so far as intelligence is concerned? Shall we agree with Wood (**19**) that these students are foredoomed to mediocre performance in college—that there is a one-to-one correspondence between the intelligence scores and achievement in college? Let us look farther.

In the first place, what is the real meaning of "run of the mine" or "median" intelligence scores or ratings? Median intelligence is

by no means low intelligence, and the writer has carefully refrained from employing the word "low." "The median," it should not be forgotten, "is defined as the midpoint of the series, that is, as the point above which and below which are 50 per cent of the measures" (6: 11). "Run of the mine" may be interpreted to have somewhat the same significance. Again, the fact or principle of overlapping must not be overlooked. Even though in the Wisconsin study (18) the 3,687 high-school Seniors who chose teaching had a median of 52 as compared with a median of 81 for the 283 "journalists," there

TABLE II

COMPARISON OF SCORES ON ARMY ALPHA TEST MADE BY NORMAL-SCHOOL GRADUATES, ARMY CAPTAINS, AND THE WHITE SOLDIERS DRAFTED IN THE WORLD WAR*

| Score | Percentage of Normal-School Graduates | Percentage of Army Captains | Percentage of White Draft |
|---|---|---|---|
| A | 47.4 | 53.4 | 4.1 |
| B | 38.2 | 29.0 | 8.0 |
| C+ | 14.2 | 14.4 | 15.2 |
| C | 0.2 | 3.8 | 25.0 |
| C− | 0.0 | 0.4 | 23.8 |

* After Frederick Lamson Whitney (17: 8).

was without doubt a large amount of overlapping among the scores in the upper levels.

There is, moreover, some evidence in the field to show that normal-school students are not unintelligent. Table II gives a comparison presented by Whitney (17) of the scores made by normal-school or teachers'-college graduates on the Army Alpha Test and the scores made by persons in different occupations represented in the army. The similarity between the standing of the normal-school graduates and that of the army captains should be noted. It is interesting to find that only 0.2 per cent of the "teachers" fell below C plus. Whitney writes:

> About half of this group of prospective elementary-school teachers are found on a level of intelligence equivalent to that of army engineers, another 40 per cent may be compared with physicians and dentists, while the remainder, the smallest part, have literal ratings similar to those of bookkeepers, clerks, and skilled workmen [17: 8].

When we are able to survey intelligence with more accuracy, we shall perhaps discover that the intelligence levels now found among persons making different vocational choices will have to be revised.

Other evidence of superior intelligence among students of teachers' colleges is contained in a letter from Odell (11) reporting findings made by Seiler in the registrar's office at the University of Illinois. Seiler studied the records of Juniors and Seniors in the College of Education during the period 1925–29.

> He found that the point average of the men who had had their first two years' work in normal school [teachers' colleges] was 3.85, whereas that of the men who had had their first two years' work here [in the University] was 3.55; for the women, the corresponding averages were 3.81 and 3.70; for other transfer students than those from normal schools, the figures were not so far from those of students who had attended here and were below those for the normal-school transfers [11].

In fairness to Seiler and Odell it should be said that it is perfectly obvious to them that the students transferring from normal schools to a university are a selected group—just how highly selected no one knows. However, such data show conclusively that not all the raw material of the teachers' colleges is found on the level of mediocrity. Reitz, whose studies were concerned with teachers in service, feels confident that teachers are surpassed in intelligence by persons in only two other occupations.

> Only 3.2 per cent of the 31,967 men of the "Principal Sample" of the white draft of the Army Study, representing the United States at large, would have surpassed the mean intelligence of the teachers. . . . .
>
> While Fryer's Occupational Intelligence Standards give teachers fifth place among ninety-six other occupations with respect to intelligence, in the light of the present results, teachers should have third place, being surpassed only by engineers and clergymen [14: 174].

At the risk of being accused of a priori reasoning, the writer would like to offer in evidence the attitude toward teachers' colleges assumed by the North Central Association of Colleges and Secondary Schools. There was a time, only a few decades ago, when such a thing as a four-year course leading to a baccalaureate degree was unheard of in teachers' colleges or normal schools. For a considerable time after the pioneering members of this group began to extend their courses to four years and to offer baccalaureate degrees, the majority of the

larger universities looked on these degrees with suspicion. Persons holding degrees from teachers' colleges were subjected to cuts and conditions when they attempted to register for post-graduate study. That condition is being rapidly changed. At present a large number of state teachers' colleges are rated by the North Central Association in Class B, a rating which implies only light conditions upon enrolment for graduate study. Another large group is rated in Class A, the highest rank, and the students of the institutions so listed may enter any of the member universities and many others with no conditions whatever. This fact indicates that the examining committees of the North Central Association consider the student raw material of the teachers' colleges satisfactory.

So far no evidence which even suggests a doubt of the validity of intelligence scores as an index of success in college has been offered. Casual observers have always been able to name individuals who seemed brilliant but made poor college records, and vice versa. Almost every investigator, since Wood (19) issued the results of his well-known study claiming a one-to-one correspondence between intelligence and college success, has come to the conclusion that the intelligence score is *not* the best single index of probable college success if, indeed, the use of any single index for prediction in this field can be considered good technique.

Persistence, as evidenced by the number of quarters or semesters a student remains in college, is an essential trait. A good student is likely to persevere until graduation. Nevertheless, Edgerton and Toops in their study at Ohio State University found a low correlation between intelligence-test scores and persistence in college. "The intelligence test percentile correlated on the average .19 with persistence" (5: 134). Persistence showed only a slightly higher correlation (.23) with the estimate made by entrance boards of the high-school record. Odell (13), however, found data which seemed to indicate that there is considerable relation between intelligence percentiles and persistence in college.

As has already been stated, the intelligence score is no longer considered the best single index of college success. It has been superseded by high-school averages. Thus Brooks says:

> The number of units offered for entrance does not seem to have much value in forecasting academic success in college (4: 575).

> High-school marks have much more value. While their predictive value varies greatly from one college to another (the correlations ranging from .26 to .77) and from one year to another in the same institution, yet they are at present the best single basis of admission to colleges of arts and sciences which has thus far been extensively investigated [4: 574].

Odell makes essentially the same statement: "There is no question but that with a few exceptions much better predictions of probable Freshman marks could be based upon the high-school averages than upon the test [intelligence] scores obtained in this study" (12: 31). In another study Odell found a correlation of .36 between high-school averages and Freshman averages and a correlation of only .19 between intelligence quotients and Freshman averages (9: 42). The day of the use of the intelligence score as a single predictive index of college success is about over. Indeed, a single index of any kind is no longer considered sufficient for the prediction of success. Brooks states that "a combination of two or more bases of admission is likely to be better than any one basis alone" (4: 581).

Nor has the intelligence score been found to be the best single index for predicting the success of the graduate of the teachers' college after he enters teaching. Whitney (17), Somers (15), and Ullman (16) found that student teaching has a higher correlation with teaching success than any other single factor. The correlations found by each of these investigators between intelligence scores and teaching success and between student teaching and teaching success are as follows: Whitney, .025 and .238; Somers, .425 and .70; Ullman, .15 and .36. These three investigators used a combination of factors for prediction. Bagley (1) made a survey of the rural teachers in the state of New York. He included more than fifty items in his scheme of investigation but made no use of the intelligence score.

Enough data have been presented to justify some generalizations with respect to the intelligence of teachers. The data apparently indicate that, while the medians of the intelligence scores of persons entering the Freshman classes of teachers' colleges usually classify these entrants as the run of the mine, nevertheless, because of the principle of overlapping in the distribution, a large number of these students will be found in the higher intelligence levels. In this connection a statement from Kirkpatrick's Massachusetts Normal

School Survey may be cited: "Colleges have and keep more brilliant students, yet between 80 and 90 per cent of all students of colleges are of the same grade of intelligence as are found in the Massachusetts normal schools" (8: 57). The data also indicate that the intelligence score alone is no longer considered the best index of college success and that the intelligence score is not now considered the best single index of teaching success. As a corollary to these conclusions it might be added that the use of any single index for prediction is no longer considered the best technique.

Teachers, therefore, have no reason to be ashamed of the intelligence level of the profession even if intelligence were the best predictive factor of success in teaching. The writer is heartily in favor of progress and improvement in all lines of social endeavor, but it is his belief that improvement in the character of the raw material received by the teachers' colleges will come through improvements in the curriculums and teaching methods in the elementary and secondary schools and through the selection of entrants on the basis of a multiple correlation of numerous traits rather than on the basis of the single factor of intelligence score.

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# CHILDREN'S INTERESTS

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The investigation reported in this article was made in an effort to assist in solving the problem of securing and holding children's interest. Information revealing children's likes and dislikes and the intensity of these likes and dislikes seemed pertinent to the solution of this problem. It was assumed that, by giving children an opportunity to make discriminating choices, it would be possible to determine what some of their likes and dislikes are and in a limited degree to estimate the intensity of those likes and dislikes. With regard to the validity of testing likes and dislikes, Herring says:

> It is assumed that children's choices between paired stimuli are a better criterion than the judgments of adults who observe the behavior of liking and disliking. . . . . Subjective states of affection are not easy of approach by direct measurement; and in the case of indirect measurement of them it is likely that choices would be the best criterion.[1]

The secondary problems growing out of the primary problem of discovering children's interests were: (1) to determine the ranks of various occupations on the basis of the children's choices, (2) to determine whether the father's occupation had any influence on the child's vocational choice, (3) to determine whether grade in school had any bearing on likes and dislikes, (4) to determine in so far as possible the intensity of their likes and dislikes by having children make choices from lists of activities, (5) to determine whether sex had any bearing on likes and dislikes.

This investigation was made during the school year 1930–31. The information was secured by means of a test given to the children in Grades IV–VIII, inclusive, in eight Arizona communities. The test items were divided into five large classes, which were planned to cover, as nearly as possible and as space would permit,

[1] John P. Herring, "The Measurement of Liking and Disliking," *Journal of Educational Psychology*, XXI (March, 1930), 169.

all the occupational choices, pastimes, home activities, school subjects, and school and community activities familiar to children in the grades studied. Five columns with the following headings gave opportunity for the children to express degrees of liking and disliking: "Like very much" was thought of as having a strong taste or appetite for the thing mentioned; "Like slightly," as having some taste for the thing; "Indifferent," as not caring for it or being unconcerned about it; "Dislike slightly," as having a slight distaste for it; "Dislike very much," as having a strong feeling of repugnance or aversion to it (hatred or fixed dislike). These columns were not used in the part of the test dealing with occupational choices, as merely the ranks of the choices were desired.

The following factors were taken into consideration in comparing children's likes and dislikes: (1) chronological age, (2) father's occupation, (3) present vocational inclinations, (4) sex, (5) pastimes (how a child likes or dislikes to use his leisure time), (6) home activities, (7) school subjects taught in the communities where this test was given, and (8) community and school activities.

The test was given in communities in which the occupations, opportunities, and cultural interests differed widely. It was hoped that the choices of the children would thus reflect no specific environmental background and would be more representative of all children. The 1,087 children tested ranged in age from eight to seventeen years in Grades IV–VIII, inclusive. Of this number 537 were girls, and 550 were boys.

*Occupational choices.*—The occupational choices of the boys and girls were ranked according to first, second, and third choices. Table I shows the ranks of all the first, second, and third choices of the fifteen occupations chosen most often by the boys and of the fourteen occupations chosen most often by the girls, as well as a ranking of the dislikes in these same occupations. The first seven occupational choices made by the boys show that boys have a definite tendency to choose occupations which call for muscular as well as mental effort. The first seven occupations given the first, second, and third choices call for a large degree of outdoor life. The second as well as the first choices should be considered, for, as J. C. Almack has said, "The first choice may be merely the ideal and the second

the practical."[1] The fact that a far greater number of boys gave aviation as their first or second choice than gave any other occupa-

TABLE I

NUMBER OF PUPILS GIVING FIRST, SECOND, AND THIRD CHOICES TO VARIOUS OCCUPATIONS AND NUMBER DISLIKING THESE OCCUPATIONS

| OCCUPATION | FIRST CHOICE | | SECOND CHOICE | | THIRD CHOICE | | DISLIKE | |
|---|---|---|---|---|---|---|---|---|
| | Number of Pupils | Rank | Number of Pupils | Rank | Number of Pupils | Rank | Number of Pupils | Rank |
| | Boys | | | | | | | |
| Aviator | 184 | 1 | 99 | 1 | 37 | 5 | 5 | 13 |
| Mechanic | 55 | 2 | 52 | 3 | 58 | 2 | 2 | 16 |
| Engineer | 53 | 3 | 93 | 2 | 75 | 1 | 4 | 14 |
| Rancher | 35 | 4 | 46 | 4 | 55 | 3 | 1 | 17 |
| Carpenter | 27 | 5 | 27 | 7 | 32 | 6 | 3 | 15 |
| Farmer | 25 | 6 | 31 | 6 | 27 | 7 | 14 | 10 |
| Forester | 19 | 7 | 38 | 5 | 42 | 4 | 5 | 13 |
| Actor | 17 | 8 | 17 | 9 | 17 | 12 | 14 | 10 |
| Lawyer | 11 | 9 | 8 | 13.5 | 24 | 8 | 17 | 9 |
| Storekeeper | 10 | 10 | 8 | 13.5 | 14 | 13 | 4 | 14 |
| Musician | 9 | 11.5 | 21 | 8 | 18 | 10.5 | 24 | 7 |
| Teacher | 9 | 11.5 | 6 | 15 | 13 | 14 | 57 | 3 |
| Doctor | 8 | 13 | 15 | 10 | 18 | 10.5 | 42 | 4 |
| Bookkeeper | 7 | 14.5 | 12 | 12 | 10 | 15 | 11 | 11 |
| Banker | 7 | 14.5 | 13 | 11 | 20 | 9 | 0 | 18 |
| | Girls | | | | | | | |
| Teacher | 121 | 1 | 79 | 1 | 45 | 3 | 32 | 5 |
| Actress | 76 | 2 | 53 | 2 | 33 | 6 | 28 | 6 |
| Nurse | 60 | 3.5 | 42 | 6 | 50 | 2 | 108 | 1 |
| Stenographer | 60 | 3.5 | 47 | 4 | 42 | 4 | 18 | 11 |
| Musician | 46 | 5 | 50 | 3 | 54 | 1 | 16 | 13 |
| Artist | 28 | 6 | 45 | 5 | 36 | 5 | 19 | 10.5 |
| Beauty-shop operator | 20 | 7 | 40 | 7 | 22 | 12.5 | 17 | 12 |
| Aviator | 15 | 8 | 11 | 15 | 11 | 17 | 0 | 29 |
| Bookkeeper | 14 | 9 | 13 | 13 | 30 | 8 | 15 | 14.5 |
| Clerk | 12 | 10.5 | 20 | 9 | 23 | 11 | 22 | 8.5 |
| Cook | 12 | 10.5 | 29 | 8 | 22 | 12.5 | 43 | 4 |
| Home-maker | 10 | 12.5 | 8 | 17 | 27 | 9 | 21 | 8.5 |
| Secretary | 10 | 12.5 | 18 | 10 | 20 | 14 | 15 | 14.5 |
| Dressmaker | 9 | 14 | 15 | 12 | 25 | 10 | 49 | 3 |

tion is particularly interesting. Some probable explanations for the popularity of this occupation are: (1) the large amount of general publicity given this vocation, (2) the appeal made by the very nature

[1] John C. Almack, "Survey Mountain View High School," p. 59 (unpublished study, 1928).

of the occupation to adventurous boys of adolescent and pre-adolescent ages, and (3) the fact that the most popular heroes of the past few years have been men in this field who have especially appealed to boys of the "hero-worshiping" age. Although all boys giving aviation as their choice cannot become aviators, teachers should make use in their teaching of this intense interest in aviation and in men like Lindbergh and Byrd.

In a survey of two senior high schools Almack gives the following conclusions concerning the pupils' occupational choices: "The inventory of choices shows a predominance of interest in 'white-collar' jobs."[1] Exactly the opposite result was found in this study among elementary-school children. The noticeable preference for outdoor over "white-collar" occupations may be due to (1) a lack of consciousness of social levels on the part of the children of these ages, (2) a lack of knowledge of the comparative remuneration of the different occupations, and (3) the desire for physical rather than mental activities which is characteristic of children of these ages.

The girls' choices give evidence of a widening of the field of occupations for women and a tendency to choose vocations which require specialized training. "Teacher" led the list by a wide margin. The occupation of nursing was given first, second, and third choices by a large number of girls, but it also led the list in the number of girls disliking it.

The dislikes of both the girls and the boys displayed an aversion to distasteful occupations (ditch-digger, garbage-man, etc.) and those dealing with difficult situations (for example, preacher and nurse).

A surprisingly small relation was indicated between the father's occupation and the son's occupational choice. However, the positive relations found were among occupations in which the boys had had some opportunity for first-hand experience (rancher and farmer). The negative reactions toward the fathers' occupations were negligible.

*Pastimes.*—The data concerning pastimes given in Table II are in agreement with a recent study made among junior high school pu-

[1] *Ibid.*, p. 58.

## TABLE II

SCORES AND RANKS OF PASTIMES ACCORDING TO INDICATIONS OF LIKING MADE BY 550 BOYS AND 537 GIRLS IN GRADES IV–VIII

| PASTIME | GRADE IV | | GRADE V | | GRADE VI | | GRADE VII | | GRADE VIII | | AVERAGE RANK |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Score | Rank | Score | Rank | Score | Rank | Score | Rank | Score | Rank | |
| | Boys | | | | | | | | | | |
| Hunting | 1.30 | 4 | 1.63 | 1 | 1.80 | 1 | 1.74 | 1 | 1.54 | 2 | 1 |
| Camping | 1.38 | 2 | 1.48 | 3 | 1.61 | 3.5 | 1.65 | 2 | 1.56 | 1 | 2 |
| Swimming | 1.33 | 3 | 1.60 | 2 | 1.52 | 5 | 1.63 | 3 | 1.52 | 3 | 3 |
| Baseball | 1.40 | 1 | 1.37 | 4 | 1.78 | 2 | 1.14 | 8 | 1.26 | 6 | 4 |
| Hiking | 1.25 | 5 | 1.17 | 6 | 1.61 | 3.5 | 1.55 | 4 | 1.30 | 5 | 5 |
| Motion pictures | 1.22 | 6.5 | 1.35 | 5 | 1.34 | 9 | 1.32 | 6 | 1.21 | 7 | 6 |
| Radio | 1.20 | 9 | 1.09 | 8 | 1.35 | 7.5 | 1.23 | 7 | 1.10 | 8.5 | 7 |
| Basket ball | .97 | 13 | 1.05 | 10 | 1.27 | 10 | 1.47 | 5 | 1.50 | 4 | 8 |
| Playing games | 1.21 | 8 | 1.06 | 9 | 1.35 | 7.5 | .98 | 10.5 | .80 | 14 | 9 |
| Track | 1.00 | 12 | 1.15 | 7 | 1.25 | 11 | .97 | 12 | 1.10 | 8.5 | 10 |
| Picnics | 1.22 | 6.5 | 1.01 | 12 | 1.23 | 12 | .98 | 10.5 | .95 | 10 | 11 |
| Skating | 1.04 | 11 | 1.03 | 11 | 1.17 | 14 | 1.08 | 9 | .92 | 11.5 | 12 |
| Reading magazines | 1.06 | 10 | .82 | 14 | 1.43 | 6 | .93 | 13 | .74 | 15 | 13 |
| Reading newspapers | .93 | 15 | .93 | 13 | 1.20 | 13 | .85 | 14 | .92 | 11.5 | 14 |
| Tennis | .82 | 16 | .49 | 15 | .68 | 16 | .65 | 15 | .84 | 13 | 15 |
| Music (listening to) | .95 | 14 | .45 | 16 | .91 | 15 | .51 | 16 | .65 | 16 | 16 |
| Dancing | .04 | 17 | .15 | 17 | .04 | 17 | .35 | 17 | .01 | 17 | 17 |
| | Girls | | | | | | | | | | |
| Picnics | 1.60 | 1 | 1.53 | 2 | 1.65 | 1 | 1.50 | 2.5 | 1.51 | 2 | 1 |
| Music (listening to) | 1.54 | 2 | 1.57 | 1 | 1.49 | 6 | 1.53 | 1 | 1.59 | 1 | 2 |
| Swimming | 1.31 | 5 | 1.39 | 4 | 1.34 | 8 | 1.50 | 2.5 | 1.47 | 3 | 3 |
| Motion pictures | 1.25 | 8 | 1.40 | 3 | 1.52 | 3 | 1.40 | 5 | 1.46 | 4.5 | 4 |
| Camping | 1.26 | 7 | 1.24 | 7 | 1.53 | 2 | 1.48 | 4 | 1.34 | 6.5 | 5 |
| Radio | 1.32 | 4 | 1.18 | 9 | 1.50 | 4.5 | 1.21 | 8 | 1.34 | 6.5 | 6 |
| Playing games | 1.36 | 3 | 1.20 | 8 | 1.42 | 7 | 1.19 | 9 | .90 | 14 | 7.5 |
| Hiking | 1.11 | 10 | 1.07 | 11 | 1.50 | 4.5 | 1.32 | 7 | 1.14 | 8.5 | 7.5 |
| Dancing | .97 | 12 | 1.33 | 5.5 | 1.30 | 10 | 1.18 | 10 | 1.46 | 4.5 | 9 |
| Skating | 1.28 | 6 | 1.33 | 5.5 | 1.13 | 13 | 1.14 | 11 | 1.11 | 10.5 | 10 |
| Reading magazines | 1.20 | 9 | 1.09 | 10 | 1.28 | 11 | 1.36 | 6 | 1.20 | 12 | 11 |
| Baseball | .76 | 14 | 1.03 | 12 | 1.33 | 9 | 1.06 | 12 | .86 | 15 | 12 |
| Reading newspapers | 1.05 | 11 | .84 | 13 | 1.17 | 12 | .66 | 15 | 1.00 | 13 | 13 |
| Tennis | .79 | 13 | .68 | 14 | 1.05 | 14 | .98 | 14 | 1.11 | 10.5 | 14 |
| Basket ball | .14 | 17 | .62 | 15 | .75 | 16 | 1.02 | 13 | 1.14 | 8.5 | 15 |
| Hunting | .57 | 15 | .36 | 16 | .77 | 15 | .40 | 16 | .40 | 16 | 16 |
| Track | .23 | 16 | .23 | 17 | .34 | 17 | .36 | 17 | .36 | 17 | 17 |

pils, in which pupils gave high ratings to outdoor sports.[1] The scores given the various pastimes, home activities, school subjects, and

TABLE III

SCORES AND RANKS OF HOME ACTIVITIES ACCORDING TO INDICATIONS OF LIKING MADE BY 550 BOYS AND 537 GIRLS IN GRADES IV–VIII

| ACTIVITY | GRADE IV | | GRADE V | | GRADE VI | | GRADE VII | | GRADE VIII | | AVERAGE RANK |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Score | Rank | Score | Rank | Score | Rank | Score | Rank | Score | Rank | |
| | Boys | | | | | | | | | | |
| Eating | 1.53 | 1 | 1.73 | 1 | 2.66 | 1 | 1.76 | 1 | 1.64 | 2 | 1 |
| Caring for pets | 1.49 | 2 | 1.51 | 2 | 1.54 | 2 | 1.60 | 2 | 1.13 | 3 | 2 |
| Washing hands and face | 1.40 | 3 | 1.35 | 3 | 1.48 | 3 | 1.01 | 3 | .76 | 6 | 3 |
| Taking bath | 1.32 | 5 | 1.23 | 4 | 1.40 | 4 | .82 | 6 | 1.80 | 1 | 4 |
| Cleaning teeth | 1.37 | 4 | 1.13 | 5 | 1.28 | 5 | .96 | 4 | .80 | 5 | 5 |
| Going to bed | 1.29 | 6 | .62 | 7 | 1.14 | 6 | .67 | 8 | .81 | 4 | 6 |
| Gardening | .84 | 8 | .63 | 6 | 1.07 | 7 | .87 | 5 | .54 | 7 | 7 |
| Cooking | .66 | 10 | .30 | 11 | .86 | 8 | .76 | 7 | .42 | 8 | 8 |
| Getting up | .71 | 9 | .51 | 8 | .64 | 10.5 | .36 | 9 | .34 | 9 | 9 |
| Cleaning room | 1.04 | 7 | .31 | 10 | .79 | 9 | .09 | 11 | .32 | 10 | 10 |
| Mowing lawn | .56 | 11 | .44 | 9 | .64 | 10.5 | .16 | 10 | .20 | 12 | 11 |
| Practicing music | .38 | 13 | .01 | 12 | .31 | 12 | .00 | 12 | — .11 | 13 | 12.5 |
| Doing housework | — .49 | 12 | — .21 | 13 | .16 | 13 | — .47 | 13 | .22 | 11 | 12.5 |
| Washing dishes | .16 | 14 | — .83 | 14 | .08 | 14 | — .78 | 14 | — .57 | 14 | 14 |
| | Girls | | | | | | | | | | |
| Eating | 1.71 | 3 | 1.74 | 2 | 1.78 | 1 | 1.52 | 1 | 1.56 | 1.5 | 1 |
| Washing hands and face | 1.73 | 1.5 | 1.77 | 1 | 1.66 | 3 | 1.43 | 3 | 1.54 | 4 | 2 |
| Taking bath | 1.63 | 5 | 1.71 | 3 | 1.74 | 2 | 1.37 | 4 | 1.55 | 3 | 3 |
| Cooking | 1.54 | 6 | 1.62 | 4 | 1.58 | 4 | 1.46 | 2 | 1.56 | 1.5 | 4 |
| Cleaning teeth | 1.73 | 1.5 | 1.57 | 5 | 1.50 | 5 | 1.34 | 5 | 1.32 | 5.5 | 5 |
| Caring for pets | 1.67 | 4 | 1.40 | 6 | 1.45 | 6 | 1.26 | 6 | 1.23 | 7 | 6 |
| Cleaning room | 1.35 | 7 | 1.26 | 7 | 1.38 | 7 | 1.25 | 7 | 1.32 | 5.5 | 7 |
| Doing housework | 1.10 | 9 | .75 | 10 | 1.18 | 8 | .95 | 8 | .95 | 8 | 8 |
| Gardening | .99 | 11 | .77 | 9 | 1.01 | 9 | .73 | 9.5 | .83 | 9 | 9 |
| Practicing music | .76 | 12 | .99 | 8 | .78 | 10 | .73 | 9.5 | .48 | 11 | 10 |
| Going to bed | 1.17 | 8 | .67 | 11 | .64 | 11 | .56 | 11 | .13 | 12 | 11 |
| Getting up | 1.04 | 10 | .32 | 12 | .47 | 12 | .23 | 12 | .49 | 10 | 12 |
| Washing dishes | .47 | 14 | .30 | 14 | .24 | 13 | .17 | 13 | .33 | 13 | 13 |
| Mowing lawn | .48 | 13 | .31 | 13 | .16 | 14 | .07 | 14 | .07 | 14 | 14 |

[1] Orlie M. Clem and Kathie V. Mallory, "Some Individual Differences of Pupils in One Typical Junior High School," *Educational Administration and Supervision*, XVI (January, 1930), 51.

school and community activities were determined by assigning a numerical weighting to each of the five columns following these items. By means of an arithmetical formula using these weightings, the scores of the various items were determined.

A notable difference in the pastimes preferred by boys and those preferred by girls is indicated by the boys' strong interest in pastimes involving motor activity, in which boys usually excel, while the girls' preferences were for pastimes of a more social nature. A partial explanation of this result may be that the conventions and social restraints placed on girls curb their interest and their skill in pastimes requiring motor activity. With very few exceptions, the ages and grades of the children seemed to influence less the ranks given pastimes than the ranks given in any other section of the test.

*Home activities.*—The scores and the ranks of the various home activities, which are given in Table III, disclose results of interest to parents and teachers. Possibly the outstanding point to observe in the ranks given the home activities by both boys and girls is their preference for the duties concerned with care of the person (taking bath, cleaning teeth, etc.) rather than tasks about the home (cleaning room and washing dishes). The scores indicate that the activities disliked by the boys were much more intensely disliked than the activities disliked by the girls.

*School subjects.*—Table IV discloses some results worth consideration. That the younger children liked the school subjects more intensely than did the older pupils is indicated by the high scores shown for the lower grades. The situation may be due to the fact that the older children have more outside interests to attract their attention and to hold their interest than have the younger children. In some instances new subjects introduced into the curriculum received high ranks in the grades in which they were first offered, for example, home economics and manual training in Grades VII and VIII.

There was far less unanimity of opinion in the part of the test dealing with school subjects than in other parts of the test. The boys and girls did not agree in their likings for various subjects, and no general tendencies are evident in the case of either boys or girls.

*School and community activities.*—The task of preparing a test covering extra-curriculum activities of children whose ages covered such a wide range as did those in this study proved to be difficult,

TABLE IV

SCORES AND RANKS OF SCHOOL SUBJECTS ACCORDING TO INDICATIONS OF LIKING MADE BY 550 BOYS AND 537 GIRLS IN GRADES IV–VIII

| SUBJECT | GRADE IV | | GRADE V | | GRADE VI | | GRADE VII | | GRADE VIII | | AVERAGE RANK |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Score | Rank | Score | Rank | Score | Rank | Score | Rank | Score | Rank | |
| | Boys | | | | | | | | | | |
| Reading | 1.26 | 3 | 1.09 | 5 | 1.46 | 1 | 1.17 | 3 | 1.06 | 3 | 1 |
| Physical education | .93 | 10 | 1.38 | 1 | 1.41 | 3.5 | 1.48 | 2 | 1.34 | 2 | 2 |
| History | 1.10 | 9 | 1.24 | 3 | 1.37 | 5 | 1.04 | 4 | .97 | 4 | 3 |
| Nature-study | 1.23 | 6.5 | 1.12 | 4 | 1.45 | 2 | .91 | 6 | .74 | 7 | 4 |
| Art | 1.34 | 1.5 | 1.33 | 2 | 1.14 | 7.5 | .70 | 8 | .40 | 10 | 5 |
| Geography | 1.25 | 4 | .94 | 7 | 1.14 | 7.5 | .93 | 5 | .80 | 6 | 6.5 |
| Arithmetic | 1.34 | 1.5 | .84 | 8 | 1.27 | 6 | .64 | 9 | .84 | 5 | 6.5 |
| Spelling | 1.24 | 5 | 1.02 | 6 | .57 | 12 | .80 | 7 | .37 | 11 | 8 |
| Writing | 1.12 | 8 | .79 | 9 | 1.08 | 9 | .52 | 10 | .48 | 8 | 9 |
| English | 1.23 | 6.5 | .66 | 10 | .95 | 10 | .51 | 11 | .43 | 9 | 10 |
| Civics | ..... | ..... | ..... | ..... | .89 | 11 | .30 | 12 | .34 | 12 | ..... |
| Manual training | ..... | ..... | ..... | ..... | 1.41 | 3.5 | 1.61 | 1 | 1.42 | 1 | ..... |
| | Girls | | | | | | | | | | |
| Spelling | 1.66 | 2 | 1.40 | 1.5 | 1.46 | 2 | 1.23 | 4 | 1.76 | 1 | 1 |
| Art | 1.78 | 1 | 1.40 | 1.5 | 1.47 | 1 | 1.04 | 6 | 1.00 | 6 | 2 |
| Reading | 1.37 | 3.5 | 1.24 | 4 | 1.34 | 5 | 1.12 | 5 | 1.18 | 4 | 3 |
| Physical education | 1.25 | 6 | 1.08 | 8 | 1.35 | 4 | 1.53 | 1 | 1.37 | 3 | 4 |
| Nature-study | 1.24 | 7 | 1.21 | 6 | 1.42 | 3 | 1.32 | 2 | .97 | 7 | 5 |
| Writing | 1.37 | 3.5 | 1.37 | 3 | 1.22 | 8 | .90 | 8 | 1.05 | 5 | 6 |
| Language | 1.30 | 5 | 1.18 | 7 | 1.30 | 6 | .97 | 7 | .86 | 8 | 7 |
| Arithmetic | 1.17 | 8 | .94 | 9 | 1.25 | 7 | .83 | 10 | .59 | 10 | 8 |
| History | 1.07 | 9 | 1.23 | 5 | .54 | 11.5 | .45 | 11 | .49 | 11 | 9 |
| Geography | .93 | 10 | .67 | 10 | .88 | 10 | .84 | 9 | .60 | 9 | 10 |
| Civics | ..... | ..... | ..... | ..... | .54 | 11.5 | .28 | 12 | .42 | 12 | ..... |
| Home economics | ..... | ..... | ..... | ..... | 1.11 | 9 | 1.24 | 3 | 1.43 | 2 | ..... |

since many activities provided for eighth-grade pupils are not given to fourth- and fifth-grade pupils. The pupils in fourth and fifth grades responded to such activities as the band, Boy Scouts, Girl Scouts, and Camp-Fire Girls chiefly with indifference; therefore, their reactions in these fields were unreliable and were eliminated

## TABLE V

SCORES AND RANKS OF SCHOOL AND COMMUNITY ACTIVITIES ACCORDING TO INDICATIONS OF LIKING MADE BY 550 BOYS AND 537 GIRLS IN GRADES IV–VIII

| ACTIVITY | GRADE IV | | GRADE V | | GRADE VI | | GRADE VII | | GRADE VIII | | AVERAGE RANK |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Score | Rank | Score | Rank | Score | Rank | Score | Rank | Score | Rank | |
| | Boys | | | | | | | | | | |
| Helping others | 1.58 | 1 | 2.27 | 1 | 1.70 | 1 | 1.62 | 1 | 1.46 | 1 | 1 |
| Taking part in contests | .95 | 7 | 1.03 | 2.5 | 1.31 | 2 | 1.15 | 3 | 1.00 | 3 | 2 |
| Going to school | 1.25 | 4.5 | 1.02 | 4 | 1.06 | 5 | .80 | 7 | .90 | 4 | 3.5 |
| Going to church | 1.40 | 2 | .86 | 5 | 1.08 | 3 | .67 | 8.5 | .53 | 6 | 3.5 |
| Collecting things | .78 | 8 | 1.03 | 2.5 | .92 | 8 | .93 | 4 | .62 | 5 | 5 |
| Going to Sunday school | 1.38 | 3 | .84 | 6 | 1.00 | 6 | .86 | 5.5 | .45 | 8 | 6 |
| Taking part in plays | 1.25 | 4.5 | .55 | 8 | .70 | 10 | .86 | 5.5 | .46 | 7 | 7 |
| Taking tests | 1.08 | 6 | .60 | 7 | .97 | 7 | .10 | 12 | .02 | 12 | 8 |
| Playing in the orchestra | .60 | 10 | .48 | 9 | .64 | 11 | .52 | 10 | .07 | 11 | 9 |
| Operettas | .70 | 9 | .17 | 10 | .47 | 12 | .41 | 11 | .12 | 10 | 10 |
| Playing in the band | ..... | ..... | ..... | ..... | .85 | 9 | .67 | 8.5 | .36 | 9 | ..... |
| Boy Scouts | ..... | ..... | ..... | ..... | 1.07 | 4 | 1.17 | 2 | 1.16 | 2 | ..... |
| | Girls | | | | | | | | | | |
| Helping others | 1.82 | 1 | 1.81 | 1 | 1.84 | 1 | 1.78 | 1 | 1.39 | 1 | 1 |
| Taking part in plays | 1.57 | 4 | 1.57 | 4 | 1.43 | 2 | 1.36 | 2 | 1.22 | 2 | 2 |
| Going to Sunday school | 1.70 | 2 | 1.62 | 2 | 1.36 | 4 | 1.33 | 3 | 1.04 | 5 | 3 |
| Going to school | 1.61 | 3 | 1.61 | 3 | 1.40 | 3 | 1.28 | 4 | 1.40 | 4 | 4 |
| Going to church | 1.55 | 5 | 1.30 | 5 | 1.20 | 6 | 1.20 | 5 | .96 | 8 | 5 |
| Operettas | 1.30 | 6 | 1.25 | 6 | 1.08 | 8 | .95 | 7 | 1.00 | 7 | 6 |
| Taking part in contests | 1.24 | 7 | 1.10 | 7 | 1.05 | 9 | .88 | 8 | 1.02 | 6 | 7 |
| Collecting things | .71 | 9 | .88 | 8 | .75 | 10 | .53 | 11 | .80 | 10 | 8 |
| Playing in the orchestra | .66 | 10 | .66 | 10 | .70 | 12 | .58 | 10 | .54 | 11 | 9 |
| Taking tests | 1.10 | 8 | .77 | 9 | .63 | 13 | .32 | 13 | .07 | 13 | 10 |
| Playing in the band | ..... | ..... | ..... | ..... | .71 | 11 | .46 | 12 | .42 | 12 | ..... |
| Camp-Fire Girls | ..... | ..... | ..... | ... | 1.25 | 5 | 1.17 | 6 | 1.18 | 3 | ..... |
| Girl Scouts | ..... | ..... | ..... | ..... | 1.15 | 7 | .84 | 9 | .95 | 9 | ..... |

from the results of the test as given in Table V. The intensity of liking for the various school and community activities indicated by the upper-grade pupils was noticeably less than that indicated by the lower-grade children. A possible explanation is that pupils in the upper grades have a wider range of activities provided for them; consequently, their interests are more divided than are those of the younger pupils. The children of all ages evidently enjoy working and co-operating with one another, as the boys and girls in every grade evinced an intense desire to help others.

*Summary.*—The test which was given in this study may be considered a fairly reliable check of the vocational choices of the children tested, for the reason that it was given to a fairly large number of children (1,087 boys and girls) in eight communities with a wide range of environmental backgrounds. The weak points of the test consist in the inadequacy of the occupation lists given (a large number of occupational choices having been written in) and in the failure to check the reliability by retesting. The wide ranges in the ages and the grades of the children made it difficult to prepare a test which would be suitable for the fourth grade and still be adequate for the eighth grade.

Studies of this nature will be valuable to the teaching profession only in so far as the individual teacher makes use of the interests indicated to further the major objectives of education. Some actual knowledge of the child's interests is essential in order that we may better understand the pupil. Luckey concludes: "Whatever may be the demands of the curriculum, the true teacher will deviate far enough to discover and call forth the native interests of the child, for it is only when this interest is aroused and properly directed that the schoolroom can offer anything of permanent good."[1]

[1] G. W. A. Luckey, "Practical Results Obtained through the Study of Children's Interests," *Proceedings of the National Education Association*, XXXVI (1897), 287.

# UNITS OF WORK AND READING

HELEN LAURIE
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During the school year 1930–31 in the Co-operating City Schools of St. Louis County, Missouri, the teachers, the principals, the superintendents, and the supervisor came to the conclusion that in some respects they were teaching reading fairly well but that in other respects they were not doing as much as they should. They were taking care of the so-called "reading to gain skill"[1] or "work-and-play"[2] type of reading in the regular reading periods. They had also done considerable planning with the children for the making of attractive library corners in the classrooms, had helped the children in carrying out these plans, and had collected reading materials for the classroom libraries.

Many of the teachers agreed, however, that they were not enriching the children's lives by giving them opportunities to grow through rich experiences. The teachers recognized that the children were reading from books about many things which they had never seen and that consequently they failed to grasp the full meaning. The children did not have clear, true concepts of the things, animals, persons, and activities which were mentioned in their textbooks or library books. It was felt, therefore, that the teachers should consciously plan to give the children opportunities to develop valuable units of work which would help them to grow in understanding through worth-while experiences. It was also felt that some reading should naturally come out of these activities. This procedure would help to supply a kind of reading material different from that which has been published and might also build up a love for reading in a way that would be impossible without the use of some of the children's own compositions.

[1] Gerald Alan Yoakam, *Reading and Study*, p. 63. New York: Macmillan Co., 1928.

[2] Arthur I. Gates, *Interest and Ability in Reading*, p. 37. New York: Macmillan Co., 1930.

During the previous year, 1929–30, these conclusions had been brought to light through informal conversations held by the supervisor with teachers, principals, and superintendents. A few demonstrations had been given to illustrate the teaching of reading to gain skill, to show how pleasure reading may be developed through the use of the classroom library, and to illustrate the value of the creative-work period. An attempt had been made to demonstrate the value of the work period both from the standpoint of richness of experience and from the standpoint of need for some reading related to activities. However, the character of the work done during these periods was not stimulating, and the work periods did not show progression in power from grade to grade. It was thought that this fault might be overcome if at least one big interest were to be carried forward by each group of children. The hope was that such a common experience would not utilize all the children all the time in the work period, and thus cause the children to tire of the group interest, but that the common experience would help to point the work toward something vital and interesting by giving challenging opportunities for group work as well as time for individual projects.

In May, 1930, teachers were asked to send the supervisor a list of activities carried on during the year and a detailed description of their most satisfactory activity of the year.

In September, 1930, each teacher was given by her superintendent a twenty-one–page mimeographed bulletin fastened between durable covers. This bulletin, which had been prepared by the supervisor, contained a foreword outlining the intensive problems studied throughout the county for the preceding two years and stating that the planning and executing of worth-while units of work would be the special problem for the coming year. The reasons already cited in this article were also included in the bulletin. The bulletin contained a list of fifty-three different activities which had been carried on by the teachers during the school year 1929–30. These were classified as seasonal, recreational, aesthetic, skill, health, and purposing activities. The nature of a few of these activities is indicated in the following outline.

1. Seasonal
   *a*) Composing a group poem about all the things for which we are thankful at Thanksgiving time

*b*) Making gifts for father and mother at Christmas time, the cards and tags to go with them, and wrapping them at school
*c*) Having a Colonial party on Washington's birthday

2. Recreational
*a*) Having a coasting party
*b*) Having birthday parties

3. Aesthetic
*a*) Having a symphony orchestra
*b*) Telling about the beautiful things pupils saw coming to school

4. Skill
*a*) Keeping a record of number progress on a "Watch Us Run" chart
*b*) Keeping individual records of work done in a creative-work period
*c*) Having a "Good Readers' Club" and a "Read-a-Book Club"

5. Health
*a*) Keeping track of children's height and weight all year and working to improve health
*b*) Making a series of health posters to display in the hall for other children to see

6. Purposing
*a*) Organizing a schoolroom into a village
*b*) Taking care of Valle, the school cat
*c*) Planting radishes and lettuce and having a lunch from their own garden vegetables
*d*) Writing a newspaper regularly
*e*) Making and furnishing a three-room bungalow, furniture being made out of wooden boxes and large enough for children to use

The bulletin also contained a detailed description of how one teacher and her children had organized their room into work centers; a statement of the need for standards of workmanship, illustrations being given; and a discussion of the value of record-keeping, with illustrations. At the end of the bulletin was given a bibliography of books and magazine articles of a general nature dealing with units of work, classroom organization, music, nature-study, and the work period. The bibliography also included a list of valuable books, courses of studies, and magazine articles describing in detail units of work which had been carried out at different places.

The bulletin contained ten guiding principles for the selection of a unit of work. These principles helped teachers to select worthwhile units and to avoid duplications. The teachers in some schools, after choosing their units, held conferences in their buildings in order

that they might be sure they were showing progression in the selections. The guiding principles read as follows:

1. The unit of work should be of basic social value. Is it of value to the children now? Does it lead in the direction of our general purposes in education, such as (1) "the understanding of social relationships, (2) the observance of the laws of health and nature, (3) the appreciation of the fine and practical arts, and (4) the mastery of tools and learning?"[1] Does it lead toward what is meant by education? Is it of high social value?

2. It should fit the age of the child. Is this activity suitable for the present physical development of the children? Their mental development? Does this activity universally appeal to the children of this age? Will the children of this particular group be vitally interested in it?

3. The unit of work should be difficult enough to challenge and at the same time easy enough to enable the children to enjoy some measure of success. Is there something in the unit to challenge both the more mature and also the less mature children of the group? Will the less mature children be able to enjoy some measure of success?

4. The unit of work should lead into many kinds of activities to take care of individual differences. Are there opportunities for language expression in many different forms? Construction work with many different materials? Art expression with a variety of materials? Investigation into books, pictures, museums?

5. Units of work should show progression from activity to activity, semester to semester, year to year. Is it different from anything else studied? At the same time, is it related to what has previously been undertaken? Is it more difficult than anything previously attempted? Will it help the child to grow in thinking power and skill?

6. Units of work should lead into other worthy activities of a higher level. Is this unit final in itself? What leads might one anticipate? Are these leads bringing children to a higher level of purposing?

7. It must be possible to collect materials and to carry on the unit with available facilities. What materials may be used in carrying out the unit? Are these materials available? If not, what may be substituted? Is it going to be possible to carry out the unit satisfactorily with materials at hand? Is large material available to satisfy the needs of the small child for large-muscle activity?

8. A major unit of work should contribute to the children's efficiency in the tool subjects. Is reading of a somewhat intensive nature going to be needed? Of an extensive nature? What spelling, writing, and arithmetic in the required course of study may be used in the unit?

9. A unit is of no required length. How long will this unit probably take? How far may we carry it? Are there other activities going on in the classroom?

[1] Mabel E. Simpson, "The Kindergarten-Primary Unit," *Childhood Education*, VI (November, 1929), 112.

How can they be related? Will there be time enough to give the children opportunity for good thinking and for making some conclusions?

10. The ways in which an interest in the unit may best be stimulated should be considered. Have the children already found their interest in the unit of work selected by these guiding principles? How may the classroom environment be changed to stimulate an interest in it? Is the situation such that the teacher should rely on herself to arouse the interest in the children?

This program, undertaken to broaden the children's experiences, was carried forward through stimulation of interest and effort in many different ways. Often an activity was chosen to fit the required course of study or required textbook material with the idea of clarifying children's notions of things and people. The supervisor made available to teachers literature and materials needed for their chosen units of work. She held building conferences with the teachers and the principals, both collectively and individually. She visited classrooms where units of work were in different stages of progression, suggested places where the teachers might visit when desired, and arranged a few demonstrations by different teachers in the county.

Opportunities for the teachers of the county to visit widely during one week in May were planned. In some instances cadets from Washington University, the principal, or a substitute taught for the teachers. Some teachers visited neighboring schools before or after school or at the noon hour. Some cities also invited parents to visit in the evenings.

The children grew in understanding by carrying out the activities. They also gained power in reading and in the use of language by making records of their activities. These values may be more obvious if some illustrations of the activities that were carried on from the kindergarten through the fourth grade are given. It must be understood, however, that in every unit many other activities than reading were enjoyed and also that in every unit some related reading from books was done.

### UNITS DEVELOPED IN KINDERGARTEN

In one kindergarten the teacher, through books selected from the library table, through the stories the children told and wanted told or read to them, and also through their informal conversations, came to a realization that an interest in animals was being developed.

She noticed too that, although the children had been taken to the zoo, they had observed very little about the animals. As a result, the teacher took the children to the zoo one morning. For days after the visit the children kept recalling what they had seen. The teacher heard such remarks as the following:

"The way Mr. Zebra licked the cake of salt was the funniest of all."

"No, the way Mr. Buffalo bucked his horns against the fence when he saw us coming."

"How those baby lions were sleeping all piled up together by their mother!"

"Oh, those baby lions were not half as sound asleep as old Mr. Alligator was before the keeper poked him with a stick."

The teacher noticed that there was an added zest for the library books about animals and that children who had not been especially interested in books were searching for books containing pictures of the animals they had seen at the zoo.

A few days after their visit the teacher showed the children a stack of large, blank scrapbooks and asked them if they would like to make a picture story of the animals they had seen. They made large colored free-hand drawings on paper of a size suitable for pasting in the books. A space was left under each picture. From time to time the children and the teacher discussed the story they would like to place under the picture of a certain animal and worked out a group composition. These stories were typed for them on the giant typewriter with double spacing and were placed on the desired page of their scrapbooks. They enjoyed looking in their books each time the story was read to them by the teacher. In the beginning of their books the children placed pictures which they had drawn of themselves in the school bus. As an illustration of the nature of the book, the story which accompanied the picture of the zebra is given.

Here is one of the zebras.
They look something like a horse only they have black stripes on their white skins.
They followed us all around the fence and were friendly to us.
We think they wanted to play.
There was a big lump of salt in the zebras' pen.
Only one zebra was licking the salt, and he didn't see us.
Most every animal needs to eat a little salt to live.
We liked the zebras very much.

When the books were finished, the pupils enjoyed having every story read to them a number of times before each child took his home to be read again by some adult. They liked to have their books open while a story was being read by the teacher. One child said to his teacher, "Do you think I can ever read my book all by myself?" The teacher told him, "Yes, if you can wait until you have been in the first grade, for there you will learn how to read."

Another kindergarten teacher took her children to the fire department. Such an interest was aroused in the life of the firemen that the children carried on the following activities: (1) visited Clayton fire department, (2) listened a number of times to the story of "Jip and the Fireman,"[1] (3) listened to many other stories about firemen, (4) enjoyed looking at the books about firemen on the library table, (5) made up stories about firemen, (6) learned songs about firemen, (7) looked through many magazines obtained from the fire chief, (8) cut pictures from these magazines to paste in a scrapbook, (9) built and painted a firehouse like the one they had visited, (10) made firemen's hats with numbers on them, (11) made a fire hydrant, (12) made a ladder, (13) brought hose from home, (14) brought rain coats and hats from home, (15) used two little wagons for fire trucks, (16) made many easel paintings of fires, trucks, and firemen, (17) made many free-hand cuttings, (18) dramatized the life of a fireman. The teacher made a frieze of their easel paintings to decorate the room for a short time. When she took these down, she surprised the children by putting them into a large, durable book. She had typed each child's own story of his picture on the giant typewriter and mounted it opposite each picture in the book. She had recorded what each child had told the other children about his picture when he had first shown it to the group. Here is one of these childlike stories.

"Ding-a-ling, ding-a-ling," rings the telephone.

"Hello! Hello!" says the Fire Chief.

"Fire on Main Street! Store burning! Store burning! At 52 Main Street. Come quick and save my store!" said the storeman over the 'phone.

The siren blew, "Oh, Oh, Oh—Oh, Oh, Oh!" And the truck went speeding down the street. Clear the way! Clear the way!

[1] Helen S. Read, "Jip and the Fireman." New York: Charles Scribner's Sons, 1929.

It is not surprising that these children were so delighted with this book that they almost wore it out looking at it, playing that they were reading and asking their teacher to read it again and again.

In these ways a great desire to read and the right attitude toward reading were built up in kindergarten children.

### UNITS DEVELOPED IN FIRST GRADE

Some first-grade children had two white rats in their room. The children took care of the rats and watched them. From time to time the teacher wrote on the blackboard the stories which the children made about the rats. These stories were permanently recorded by the teacher in a large book in manuscript writing. The children enjoyed reading and re-reading this book. A part of the final story follows.

Our pets are white rats.
Their names are Tom and Betty.
They have pink eyes and long tails.
They live in a cage.
We feed the white rats.
We feed the white rats milk.
We feed the white rats water.
We feed the white rats bread.
We also give them lettuce and cheese.
We get the food from Ida.
We came to school Monday morning and found a nest.
They tore up the newspaper that was in the cage.
The father and mother rats built the nest.
We are so happy.
We have eight baby rats.
They are so small and red.
They do not have fun.
Oh! Their eyes are not open. They cannot see!
The babies cannot walk. They stay still.
Betty picks them up in her mouth.
She carries them where she wants them.
Father Rat likes the babies.
They are covered all the time.
We give Betty lots to eat.
She feeds her babies.
She gets on top of them to keep them warm.
We have counted the days, and it is fourteen days.

They are beginning to try to walk.
Their eyes are trying to come open.
Little white fur is coming out on them.

The children in another first-grade room were learning about different people and activities in the community. They visited a grocery store and decided they would build a store large enough for them to use. Much bulletin-board material resulted from this activity as well as related reading from the classroom library and the composing of the story of their store from day to day. This story was printed by the teacher in a large book after it had been told to her by the children. The book contained the following material: "Our Helpers," "Our Trip to the Store," "What We Saw in the Store," "Building Our Store," "The Contest," "Games To Play," "Grocery-Store Songs," "Grocery-Store Poems," "The Grocery-Store Party," "Playing Store," "Grocery-Store Stories," and the "Word List." Such a great variety of material appears in this book that it is difficult to give any idea of the content. The following are illustrations.

BUILDING OUR STORE

We built our store of apple and orange boxes.
Mr. B ___ sent us the apple boxes.
He is Myrtle's father.
He is a grocery man.
Betty Rose and Muriel brought boxes too.
The W___ Food Shoppe gave us boxes.
Russell nailed the boxes together for us.
We made stucco to put on the outside of the store.
This is how we made it:
  We brought flour from home.
  We bought the salt.
This is our recipe:
  8 cups flour
  3 cups salt
  5 cups water
  1 cup white sand
  Add color if desired.
  Stir well.
We collected many things for our store.
We painted salad-dressing jars cream color.
We painted catsup bottles red.
We made fruit, vegetables, and candy jars of clay, and painted them.

Mrs. B ____ brought us sawdust for our sugar and flour sacks.
She brought us a refrigerator and scales for the store.
We made aprons to wear in the store.
We like our store.

### A Grocery-Store Story

#### ON THE TELEPHONE

Miss M ____ hears us play store.
She heard Doris Jean telephone the grocery store.
This is what she heard.
"Ting-a-ling-a-ling.
"Webster 707
"Hello, is this the Village Grocery?
"This is Doris Jean.
"Will you please send these things over right away?
"One loaf of bread
"Two cans of corn
"A large can of cocoa
"Have you spinach?
"How much is it?
"Well, send me four pounds of spinach.
"Yes, that is all.
"Goodbye."

### A UNIT DEVELOPED IN THIRD GRADE

A group of children studying Carpenter's *Around the World with the Children* in a high-third grade made booklets containing colored pictures of the children of different lands and a story for each picture. The following is the story about Benito and Carmen.

My name is Benito. I am ten years old. I have a sister. Her name is Carmen. She is nine years old. We live on the Philippine Islands. Our home is a thatched hut built of bamboo poles tied together and covered with palm leaves. We have little furniture. My bed is a mat on the floor. We cook on clay bowls filled with charcoal. I like to ride on the buffalo.

### A UNIT DEVELOPED IN FOURTH GRADE

Children in a fourth grade studied the history of St. Louis. This study was made vital by excursions to the museum, dramatizations, and the making of individual booklets by the children. The booklets contained drawings, accounts of historical happenings, records in picture form of things seen at the museum, a copy of an old picture map of the city with the town well, and various clippings and

pictures of the early days collected by the children. One of the stories will illustrate the interesting content of this book.

THE MOUND BUILDERS

Long, long ago, there lived people called Mound Builders. We do not know where they came from nor where they went. Some think they were all killed by some dreadful thing. Others think they were the ancestors of the Aztec Indians in Mexico. They were peaceful, home-loving people who worked hard together. We know that there were large numbers of them and that they were good farmers because the mounds are found only in places of rich soil. Many of their relics that have been found are farming implements, such as hoes, rakes, and spades.

Many mounds built by these people have been found in the Ohio and Mississippi River valleys. The largest ever found is Monk's Mound. It is in Illinois about an hour's ride from St. Louis. It is now a state park so that people may enjoy it more.

There was a big rectangular mound in St. Louis which was sold for $10,000 and cut down many years ago. It was from this mound that St. Louis took its nickname, "The Mound City."

In all this booklet-making the teachers and the children examined books in their libraries to see how books are made with a flyleaf, a frontispiece, title-page, table of contents, and so on. They tried to maintain high standards of workmanship, art, and English.

## CONCLUSION

More than a thousand teachers visited the different schools. The visiting seemed to have a stimulating and broadening effect on the visitors by showing them the different ways in which teachers may work out the same unit and the variety of educational interests which may be developed. It was gratifying to teachers to find that their school neighbors were interested enough to call on them during the noon hour and to find that they were close enough together to receive this exchange of ideas. The children enjoyed their activities and the visitors.

A brief bibliography of literature found helpful in planning this program on units of work follows.

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MAGAZINES

*American Childhood*
*Childhood Education*
*Progressive Education*

# Educational Writings

## REVIEWS AND BOOK NOTES

*A fair wage for teachers.*—"How much can society afford in its own dollars-and-cents interests to pay any given group?"

"The essential purpose is to find a sound economic *method* for determining, first, the economic 'fair' wage for any occupational group; second, the economic 'fair' wage of the teacher" (p. 2).

Thus does Dix state the problem for which he attempts to reason out a solution.[1]

As the author implies in his title and makes entirely clear in his concluding chapter, he is seeking economic foundations and is not announcing a formula which can forthwith be applied to the computation of a salary schedule. However much we may dissent from his technological attack on the problem—and his attack is eminently respectable—and however keenly we, and no doubt he, may realize that much more is to be said, he has certainly pushed the boundaries of the thinking which is applied to this matter a good deal farther out.

The study begins by quoting Moehlman (*Public School Finance*) in repudiating sentimental treatment of the subject—a process that has been carried so far in certain quarters by the educational demagogues that some groups of public-school teachers seem never to be happy unless they are being told that they are the bulwarks of civilization and "society" can never pay them enough. The end of that road is that they get no wages at all. Of course sentimentality is the antithesis of thinking.

Out of that morass, we begin to get on some sort of solid economic ground in the doctrine that salaries should be based on cost of living, the most conspicuous representative of which is perhaps the attractive pronouncement of the Yale professors. Dix dismisses the idea by pointing out that increasing salaries and increasing cost of living go hand in hand. If we found a theory on that basis, the sky is the limit.

He next cites Moehlman's much more respectable theory that teachers' wages should bear a relatively constant relation to the wages of common labor and that such a ratio is capable of being computed and applied.

[1] Lester Dix, *The Economic Basis for the Teacher's Wage.* Lincoln School Research Studies. New York: Lincoln School of Teachers College, Columbia University, 1931. Pp. xiv+114. $1.75.

Criticism consists in calling attention to the deficiencies of the Ricardian theory of wages, upon which he thinks Moehlman's proposals ultimately rest.

> These conditions remove the chief attraction that Moehlman found in the wage of common labor. This wage tended to be relatively stable because there had always been artificial restraints upon the laborer's opportunity to move to higher wage levels. By tolerating a continuous oversupply of labor, society had kept the wage of labor just high enough to prevent unskilled laborers from disappearing into vagrancy, criminality, and starvation [p. 14].

In the judgment of the reviewer, the quotation is historically untrue, and it rests a good deal on the assumption that there is in the world a self-conscious personal being called "society," who is sometimes malicious and always stupid and which is forever doing things it ought not to do and leaving undone the things it ought to have done. Of course, there is no such being. Society is an organism and not a person, either individual or collective.

Ricardo lived in a time when English people spawned rather than bred, when industry was organized almost entirely on an individual-shop basis and there neither was nor could be such a thing as collective bargaining. If an individual owner advanced wages, his increased labor cost would drive him out of business. If workmen struck or rioted, the only effect must be to drive their employers out of business and themselves out of wage returns altogether. Betterment came about in three ways: first, by the appearance and spread of labor unions which could perform the function of collective bargaining; second, by the growth of corporations with which bargaining could be done; third, by marked reduction in the birth-rate. The "iron law of wages" was true then, and it is true now. So was the iron law of gravitation. So was the iron law that most babies would die if they were malnourished and contracted the diseases of infancy. So are they now. Betterment has come by understanding the laws of nature and obeying them. The chief contribution of Dix's study is that it helps to see into one of these laws as it applies to the remuneration of teachers.

So far as artificial restraints are concerned, these are modern inventions in the direction of betterment. In Ricardo's time women and small children could be worked anyhow and anywhere. If a workman was injured or killed, that was his hard luck. Control of the conditions under which women and children work, prohibition of the employment of young children, workmen's-compensation acts, restriction of immigration—all are artificial restraints, and none of them has any tendency to create a labor reserve. Adequate artificial restraint of the latter sort of thing is a problem yet to be solved.

No, Moehlman's theory is a step on the road which Dix has traveled and gone farther.

The author then takes his point of departure from A. C. Pigou's *The Economics of Welfare*, and indeed he evidently rests heavily on the Cambridge school of economics in general. Pigou's principle may be stated as the editor states it in his Introduction to Dix's study: "The national dividend will be at a

maximum when occupational groups requiring equally scarce native abilities receive equal marginal incomes" (p. v).

The theory itself is in reality nothing more than a restatement of the law of supply and demand with a specific application, or at least an application of the doctrine of the supply-and-demand schedule to social affairs. One would like to amend by striking out the word "native" as being nonessential. Indeed such emendation would be in harmony with the generally humanitarian tone of the study and perhaps save us from setting up a new "iron law" of human betterment.

The "courageous" part of the work—although I do not see why it should be called "courageous" when "logical" would do just as well—consists in Dix's application of Pigou's academic theory. He evidently communes thus with himself: "Equally scarce native abilities? What is scarce? Why, intelligence, native or acquired, is scarce! And teachers are supposed to be intelligent. Can we measure their intelligence? Indubitably. More than that, we are furnished periodically with popular-income distributions which will serve as the Englishman's national dividend. The problem is solved." And so it is.

There is an abundance of material from which samplings of intelligence-test scores can be had, and we have good figures for distribution of individual incomes. It remains to make comparison of the intelligence scores of teachers with those of the general run of the gainfully employed. An index of comparison is gained which can be applied to the income levels of the gainfully employed.

And so it turns out that the mean annual income of teachers in the elementary schools with two years of training who were in service prior to 1925—the marginal group which school people would be willing to admit as qualified at all—consistent with maximum general welfare would have been $2,515.

Curiously enough, approaching the problem from an entirely different angle and making reductions similar to those noted later, the reviewer thinks that the figure is probably about right. That is to say, he thinks that, if inhibiting factors, some of which Dix recognizes in his last chapter, had been removed, the "iron law" of wages would have landed this group at about that mean income *provided* Pigou's principle had really and faithfully been applied throughout the entire income scale. More than that, he thinks that wages had been tending in that direction for thirty-five years past. Note that Professor Douglas shows, in his study entitled *Real Wages in the United States, 1890–1926*, that of all the occupations studied the wages of public-school teachers showed the greatest proportionate increase.

Does it follow that the way is open to confer upon teachers such relative financial bliss by the simple expedient of finding their respective I.Q.'s and paying them accordingly? Of course not. We have here only a method of estimating at what point on the income scale teachers' salaries might conceivably come to rest in an economic world which is governed by law and not by popular sentiment. It is worth something to know that there ought to be a class of

people at work in our schools receiving something like the figures cited, and not $500 nor yet $5,000.

As to the "native-intelligence" aspect of things, nobody but a dwindling group of educational psychologists will grant that Dix was dealing with native intelligence at all, nor need he. The tests used, if applied over a sufficiently large number of cases, yield a good index of relative cultural levels, and, since it is general culture that undoubtedly counts most in the schoolroom, or at least primarily, we may assume that better professional insight acquired in training and adaptability to school work would correlate well with cultural level, as well as with real economic value as measured by demand.

The author now assumes that in determining salary levels the general average of income from property should be deducted. This, I take it, is in accordance with Pigou's principle that it is income with which we are first concerned and not wages merely. It ought once more to be noted that Dix is carefully working out estimates in the direction of economic foundations for general wage levels—and that in the interest of maximum national dividend so far as the teaching group is concerned. He does not imply that the individual teacher should be called before the controller monthly, forced to declare his or her income from property, and the pay check reduced accordingly. As property income he includes such items as "interest, dividends, rent, accumulated insurance or annuity payments, or the rental value of the equity in a partly or entirely owned home occupied by the worker" (p. 82). I presume that instead of accumulated insurance or annuity payments there should rather be counted the present worth of the annual value at maturity of these investments. The mean of this income from property as thus defined amounts to $880 in the sample group which he is studying. The actual wage would then be $1,635.

It must be remembered that he thus pictures a general condition expressed in averages, throughout the United States let us say. He would freely admit, I take it, that the operation of supply and demand, and bargaining going on under the law, would generate variations from the norm as local cost of living, intangible factors connected with positions, risk, "future," and the like might dictate.

It ought to be pointed out that the principles of Marshall, Pigou, and indeed others are neither socialistic nor communistic. They look toward social conditions and remunerations under which the national dividend will be at a maximum. The principles set forth are only what intelligent business men have come to accept, save that in their case it is the "purchasing-power" aspect of things which intrigues them. Such acceptance in the industrial world has led to a veritable revolution in the theory of the relation of profits and wages.

Nevertheless, the principles set forth cut both ways. They are as applicable to overpayment as underpayment. The heart of the matter is: What is the balancing point between emoluments which are excessive and those which are inadequate? Teachers, like other people, may be paid more than they are worth as well as less than they are worth.

I have found fault with the tendency to anthropomorphize society. I might equally well quarrel with the use of "fair" in economics. The term belongs to jurisprudence. If I agree to work for a man for a given stipend and he refuses to give that amount to me when my work is done, then it is a right use of words to say that I have been "unfairly" treated. If I agree to work for a given wage and he pays me that wage, then there is no element of unfairness in the situation. Nevertheless, people are constantly talking about "fair wages." I have known teachers who would complain that they were unfairly treated if they received $20,000 a year provided their neighbor received $25,000. The heart of Dix's work is that he accepts this challenge of "fair wages" and ascertains by a process of good economic reasoning what fair wages really are.

Altogether, the study marks distinctly a step forward in intellectual methods of attacking fundamental problems in the great matter of public instruction. It is a help in getting away from sheer empiricism, in pointing out what the immense accumulations of facts now in our hands mean.

HENRY C. MORRISON

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*Scientific value of determining the "kinetic demand."*—A recent book[1] represents a distinct contribution to the field of teacher training. Its chief value lies in the technique suggested for gathering and interpreting data rather than the conclusions reached concerning the immediate problem of supply and demand of teachers in Minnesota. The author has added a new term to educational literature, "kinetic demand," which he defines as "all positions the personnel of which has changed in any year in addition to all positions in which the combinations of activities have changed. If a teacher-position consisted of Latin and French in the year 1920–21 and did not appear in the same school in the year 1921–22, but in its place the combination of English and Latin appeared, the latter was considered a new type of position demanded in that school and was listed in the kinetic demand for positions, even though the same teacher taught it" (p. 2). By determining the "kinetic demand," the author holds that the state will be able to determine its needs more scientifically than in the past.

The data assembled in this study have been treated in such a way as to indicate trends and to establish procedures of measurement. The period covering the study extended from 1919–20 to 1929–30, and the number of facts tabulated totaled 1,400,000. One is impressed both by the extensiveness of the study and by the statistical methods used in the treatment of data. The reader is assured of the validity and the reliability of the study.

A series of percentage index numbers has been developed graphically to show trends in the demands for various subject-matter combinations over a period of years. Conclusions are drawn concerning the relation between size of schools

[1] Alfred Victor Overn, *Indices of Supply and Demand of Teachers in Minnesota.* Minneapolis, Minnesota: University of Minnesota Press, 1932. Pp. xxvi+254. $2.50.

and the number of different subjects taught by teachers. Facts are presented to show the number of various types of teachers trained by the University of Minnesota and the teachers' colleges in the state. An analysis of the demand for men as compared with the demand for women for various types of positions is included in this study. Finally, implications for the guidance of students are made.

To those readers who want a quantitative answer to the question of the supply and demand of teachers in Minnesota, this book will prove disappointing. The size of the teaching body and the wide scope of the investigation, coupled with inadequate material, apparently made it impractical for the author to give a final answer to the pressing question of supply and demand in Minnesota. However, he has proposed a plan which, if accepted and followed by the state, will place the matter of teacher preparation on a scientific basis.

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*The auditorium in the school program.*—A book[1] of 414 pages dealing with auditorium plans and procedures in public schools has been presented by Miller and Chaffee, one a director of auditorium work, the other a principal of a junior high school. The volume gives a compilation of information which represents the most complete and valuable overview of auditorium practices that has come to the attention of the reviewer. It should find its greatest use by college and university classes studying the auditorium plan of organization, by administrators and supervisors who desire a clear understanding of the philosophy and procedures guiding the auditorium movement, and by teachers who need suggestions in daily auditorium activities.

This discussion of auditorium practices is organized in five parts and is a comprehensive treatment of the field. Part I gives eighty pages to the consideration of the theoretical, historical, and psychological bases of the auditorium social arts; Part II, ninety pages to the elementary-school division; Part III, 128 pages to the intermediate or junior high school division; Part IV, thirty-nine pages to the senior high school division; and Part V, sixty-six pages to a general discussion of the educational status of auditorium activities.

*The Auditorium Social Arts* is, therefore, an attempt to cover the whole field of these activities. In this attempt its strength is also its weakness. One finds it difficult to determine for whom the book is intended or to whom it will be most helpful. The authors give a brief, clear statement of the underlying principles and the historical development of auditorium activities, such as a person not familiar with the field would need for a proper understanding of the aims and purposes which brought about auditorium procedure. They then give word pictures of auditorium procedures in elementary-school, junior high school, and senior high school organizations in some twenty selected cities, such as Gary, Detroit, Pittsburgh, and Dallas. Part V, "General Educational Status of

[1] Harry Graves Miller and Newton W. Chaffee, *The Auditorium Social Arts*. Boston: D. C. Heath & Co., 1932. Pp. xii+414. $2.20.

Auditorium Work and Its Characteristic Problems," gives briefly the results of several surveys made by college and university classes with regard to the organization and administration of the auditorium program. These chapters raise many questions the discussion of which should be helpful to teachers, supervisors, and administrators. The final chapter, "Teaching Aids," consists chiefly of suggested aims and activities and a classified bibliography.

Throughout the book there is much evidence of careful research and of experience tempered with a sane philosophy. The discussions of particular problems and phases have been prepared by associates who are specialists in their respective fields or who have summarized local procedures. The authors have attempted to be practical. Their frank, pertinent criticisms or comments help to clarify descriptions and explanations of these local practices. Although the types of auditorium practices selected cover a wide, geographical distribution, there are few or no references to auditorium work in the small cities or in small schools. From the authors' type selections the reader is likely to get the idea that the auditorium is a device for the large city or large school, whereas Superintendent R. C. Hall, of Little Rock, Arkansas, and other students of the platoon school have shown that the auditorium plan may be organized and scheduled so that it will also be practicable in the small school.

The most complete section in the book is that concerning the junior high school. Not only does it include type programs, but it also gives the complete course of study for auditorium work used in Saginaw, Michigan. A course of study of a similar nature for an elementary school, or even a tabulated summary of the types of elementary procedure quoted, would have been a helpful addition to the book.

The three pages given to a discussion of the "Home-Room Type" are very inadequate. "Home room" is not even listed in the Index. This omission conveys the idea that few junior high schools have this type of organization whereas the home-room type occurs more often than does the platoon or auditorium type. The Holmes Junior High School plan in particular is discussed, but the authors do not complete the picture. The reviewer has seen these "six or seven" groups in their regular auditorium periods with only a very small percentage of these two or three hundred pupils taking active part. Discussion of the "economy" possible under the Holmes Junior High School plan fails to explain how such "economy" has affected and handicapped teacher allotment in other Philadelphia junior high schools.

Furthermore, the authors should have given a more complete discussion to the program of grade placement of content material, since many communities will require that the school recognize or celebrate certain dates and events in an appropriate manner in all grades.

However, the book is, all in all, a valuable source of information about auditorium plans and organizations and may be ranked among the best in its field.

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*Teaching music reading in public schools.*—A recent contribution to the literature of music education is a book dealing with the mastery of the music score in school singing.[1] The contents are a compilation of methods previously discussed in print and of methods which have been tried in various school systems. However, the book is not devoid of originality nor of constructive ideas, for the author has set up standards of achievement and criticized some of those in general acceptance. Problems which frequently interfere with the successful accomplishment of work in interpreting music notation are analyzed, and means for coping with them are set forth. Emphasis is given to the facts that children are unlike, that no one set pattern of instruction will fit all, and that, if interest is to be sustained and satisfying results obtained, the weight of thought should always be on the music itself rather than on the process of reading it.

In the Preface the author states that the book is designed for use as a textbook in teacher-training courses and as a reference book for teachers in service. The chapters, all dealing with the performance through reading of vocal music at the elementary and the junior high school levels of instruction, treat standards of achievement, the teaching of notation, adjusting procedures to individual differences, sustaining interest in the intermediate grades, handling part work, teaching reading without syllables, testing the results of instruction, music in rural schools, and music and the activity program. Space is devoted to the need of adequate teacher training, while the final chapter is a summary of the main findings of the book. Questions, exercises, and lists of supplementary readings are given at the end of each chapter, which, on the whole, are helpful. A tendency to propound questions requiring purely factual answers sometimes detracts from the usefulness of the questions. Needless repetition is noted, particularly in suggestions for the activity program. Occasional errors in proofreading are evident, as in the spelling of proper names—"Damrosch" and "Gehrkens" (p. 57)—and the word "score" (p. 159). The format of the book is pleasing, and the Index is good.

The author has chosen a title which is broad rather than definitive. One wonders why she did not select a title which more nearly characterizes the contents of the volume, for the reading of music, although recognized as important, has for some time ceased to be the only phase of music-teaching in the school. However, the book, written in clear and acceptable style, is a distinct contribution to the all-too-limited number of books now available in the field.

ANNE E. PIERCE

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*Selecting and educating exceptional children.*—It is a distinct departure from the beaten path to claim that a classroom teacher can be given brief, definite instructions which will enable him, after a few weeks' observation, to make a fairly close appraisement of a backward or a brilliant pupil's mental age without

[1] Alma M. Norton, *Teaching School Music.* Los Angeles, California: C. C. Crawford (University of Southern California), 1932. Pp. 248. $2.00.

using a standardized test. A publication dealing with the education of exceptional children[1] provides a technique for the tentative selection of pupils in need of special instruction. Although this technique is but one feature of the book, it is, if as promising as the author's experience leads him to believe, the outstanding contribution of the study.

The appraisement is based on examination standings, extent of retardation or acceleration, class tests, life-histories, and informal confidential group tests of relative mental ability. The latter are, for the most part, adaptations of various items of the Stanford Revision of the Binet-Simon Intelligence Tests.

The author finds that such tests as (1) repeating digits, (2) copying a square, (3) copying a diamond, and (4) giving word meanings are easily administered in an informal group situation and that they can be objectively scored. The author would not dispense with the regular psychological examinations, particularly for those children who require institutionalization or assignment to special classes. He believes, however, that the procedure outlined is a necessary adjunct to formal testing in obtaining the appraisements on which the final dispositions of exceptional cases are based.

The volume contains chapters on the education of backward and brilliant children. Although much of the material is old, the book is to be recommended because it is comprehensible to the layman. It shows evidence of having been prepared to meet the needs of parents, welfare workers, and rural teachers as well as those of specialized educational experts. The treatment is tempered throughout by the author's good judgment, developed, no doubt, through experiences gained in a long career of educational service. Taken as a whole, the volume is a very useful presentation of valuable material.

HERMAN G. RICHEY

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*The influence of manuscript writing on learning to read.*—The effect on reading is one aspect of manuscript writing which hitherto has been studied only by means of teachers' observations. The legibility and the speed of manuscript writing have been measured. While the tests of legibility and of speed have, on the whole, been favorable to the use of this style of writing in the primary grades, its advantages in these respects have not seemed sufficiently large or certain to make it clear that manuscript writing should be adopted. Cursive writing appears to be a better style for older children and adults. If manuscript writing is taught in the primary grades, therefore, it is desirable to shift to cursive writing before the intermediate grades. If manuscript writing is adopted in the primary grades, the considerations favoring it should be strong enough to outweigh the disadvantage of this shift.

In view of these facts, the influence of the two styles of writing on the rapidity

[1] S. B. Sinclair, *Backward and Brilliant Children.* Toronto, Canada: Ryerson Press, 1931. Pp. x+76.

with which the child learns to read becomes a crucial matter. Voorhis' study[1] seems to have settled this aspect of the question. She experimented with six public-school classes in the first grade. Three classes were taught cursive and three manuscript writing throughout the year. Otherwise their instruction, which was carried on by the regular classroom teachers, was the same. The progress in reading was measured by a battery of reading tests given three times —in January, April, and June. Consideration was given to the comparability of the groups with respect to the age, intelligence, initial score on a reading test, and to the character of the teachers. Although the groups were not equal in these respects, due account was taken of the differences.

Rarely does a comparison of educational methods give such a pronounced advantage to a method as appears to be given manuscript writing in this experiment. The study leaves little room for doubt that the use of manuscript writing in the first grade markedly facilitates learning to read as contrasted with cursive writing.

FRANK N. FREEMAN

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*Studies in public-school administration.*—The need for basic research in public-school administration is being rapidly met through the dissertations of graduate students in educational administration in leading schools of education. Since some of the institutions do not require the publication of theses and dissertations, much valuable unpublished material is frequently unavailable except through interlibrary loan. Such service is inadequate for administrators in the field, inasmuch as lists of the research investigations in the various schools of education are published only infrequently and the copies of unpublished dissertations available for loan are limited in number. Teachers College, Columbia University, has for many years followed the practice of publishing its Doctors' dissertations, many of which are studies in public-school administration. Thus the findings of research are made available at moderate cost to all persons engaged in educational administration. Two examples of the types of investigations mentioned are considered in this review.

The published reports of city superintendents have long been recognized as valuable sources of information about schools. Analyses of these reports, however, have revealed deficiencies in organization, presentation, and interpretation which detract from their value and render them of little use either to the local public or to students of educational administration. A study by Clark[2] undertakes to establish criteria for use in the evaluation of school reports.

[1] Thelma G. Voorhis, *The Relative Merits of Cursive and Manuscript Writing.* Lincoln School Research Studies. New York: Lincoln School of Teachers College, Columbia University, 1931. Pp. x+58. $1.50.

[2] Zenas Read Clark, *The Recognition of Merit in Superintendents' Reports to the Public.* Teachers College Contributions to Education, No. 471. New York: Teachers College, Columbia University, 1931. Pp. x+124. $1.75.

Through an examination of the literature of educational administration, school publicity, and public relations, the author discovered eight criteria frequently mentioned by various writers in several fields as of value in arresting and holding the attention of the public through written reports. These criteria were classified into three groups: (1) those having to do with the purpose of reports, (2) those pertaining to the content, and (3) those involving the organization and the presentation of the materials. The criteria were expanded into a series of questions to facilitate their use as measures of merit in the evaluation of reports.

The author next selected a sample list of ninety-five reports, which he divided into two groups, namely, those limited to the consideration of specific topics and those not so limited. To these reports he applied his measures of merit and noted the frequency with which each measure was satisfactorily met. He gives examples to illustrate the application of each criterion in the preparation of a school report.

A study by Brunstetter[1] has two purposes: (1) the analysis of business procedures in nine New Jersey cities of different sizes in terms of established criteria and (2) the development of standard procedures for use in the smaller cities. The cities selected for study were classified into three equal groups according to size: large, medium, and small. The following aspects of business administration in these cities were evaluated according to twelve criteria which were set up by the author after securing the criticisms of fellow-students in administration with respect to the completeness and validity of the criteria: budgetary procedure, financial accounting, financial reporting, property accounting, financial safeguards, insurance, building activities, maintenance, operation, pay-roll procedure, supply management, school-board records, and personnel management.

The school systems in question were visited by the author of the dissertation, and the practices in the different aspects of business administration were considered. Tables were prepared listing the practices found by cities. On the basis of the findings thus secured, implications in business administration are pointed out for the use of small cities.

Both these published investigations should prove serviceable to persons engaged in public-school administration by acquainting them with current practices and by stimulating them to evaluate the practices of their school systems in terms of the criteria established in the dissertations. Students of educational administration, however, will find that the science of school administration has not been greatly advanced by the studies. Many will criticize both the adequacy and the validity of the criteria used in the investigations.

W. C. REAVIS

[1] M. R. Brunstetter, *Business Management in School Systems of Different Sizes:* A Study of Certain Aspects of Business Management in Nine New Jersey Cities. Teachers College Contributions to Education, No. 455. New York: Teachers College, Columbia University, 1931. Pp. viii+136. $1.50.

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